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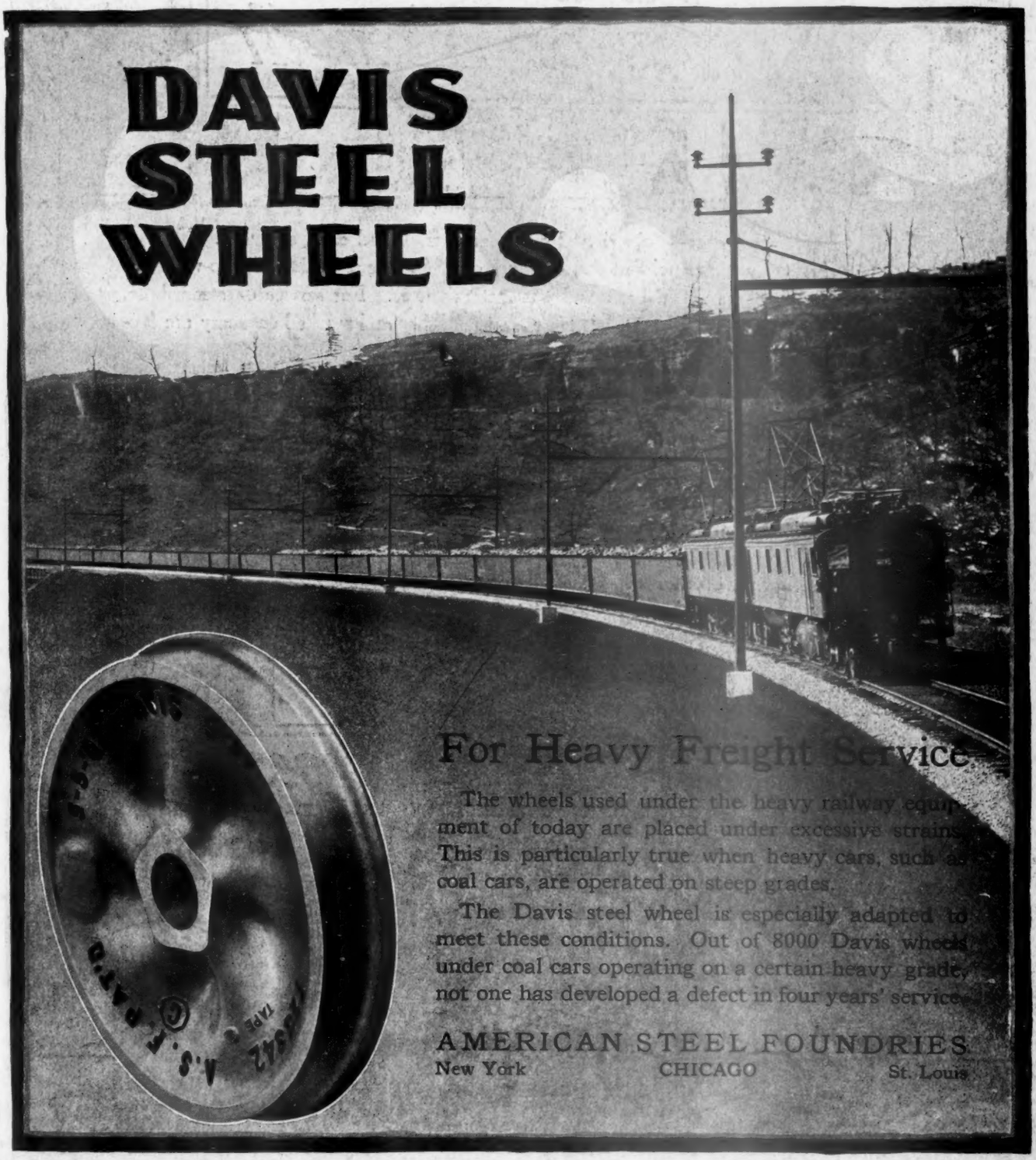
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Alphabetical Index to Advertisements, Page 6. Classified Directory of Advertisers, Page 8.

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EDITORIAL

Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Co-operation of Railways with Merchant Marine

Admiral W. S. Benson, chairman of the United States Shipping Board, has written letters to Chairman Clark of the Interstate Commerce Commission and T. DeWitt Cuyler, chairman of the Association of Railway Executives, urging upon the railways the importance of the various railway companies promoting as much as possible the shipment of raw materials and manufactured products destined for foreign ports in American ships. The recommendation of Admiral Benson that American railways shall favor American steamships as much as possible deserves favorable action. As he points out the more American freight is shipped in American vessels the more encouragement there will be given to the development of the American merchant marine. The development of the American merchant marine will tend to increase the amount of export business that can be done by the United States via American ships, because American ships will naturally tend to favor American shipments, while foreign ships will naturally tend to favor the export business of their own countries. The larger the export business built up by the United States the larger will be the amount of export freight which our railways will be given opportunity to handle. In other words, by helping foster the development of the country's merchant marine the railways of the United States will in the long run be helping to increase their own business.

A Tip On Fuel Economy

If there is any one thing that can be taken as an index to the individual fuel efficiency of every locomotive, it is the exhaust tip. A reduction in nozzle size is invariably a symptom of any one of many diseases that attack locomotive fuel efficiency. It is in itself a severe drain upon the economical performance of any locomotive if permitted to remain after the disease, which may be anything from inferior coal to a front end air leak, has been cured. In fact there is hardly a railroad on which locomotives are not permitted to operate month in and month out with needlessly restricted nozzles. Of what good are standards relating to the size or shape of nozzle tips, or the use of bridges, if these are not adhered to? The problem is not a question of design, it is one of application. We cannot expect to control the enormous fuel loss caused by restricted nozzles or by the defects that these nozzles are intended to counteract until we know the exact size and condition of every nozzle tip in every locomotive. There is only one practical and reliable way to determine periodically the size of every nozzle in every active locomotive. Whenever the monthly boiler inspection, as required by law, is made the boilermaker making this inspection should be required to measure the nozzle tip and certify to its size and condition along with other items included in the report. This information may be endorsed on the margin of the present report card and should be abstracted from these cards and presented in the form of a monthly report to every mechanical officer responsible in any way for the economical performance of the locomotives included in the report. The procedure is so simple and would have so direct an effect on fuel waste that the railroads should take the initiative towards enforcing reasonable nozzle tip standards by this means before the advisability of including this data with other reports occurs to the Locomotive Boiler Inspection Section of the Interstate Commerce Commission.

No Time for a Slump

Best available information indicates that there has been no general improvement in the percentage of motive power and freight cars available for service since the railroads were returned to private operation. The record-breaking traffic movement which reached its climax late in October, has been followed by a decline sufficient to offer some relief in the immediate requirements, but when compared with previous records, this offers little ground for the belief that the relief is, or will be, extensive. At the opening of winter the country finds itself behind on the season's movement of coal and the marketing of the grain crop held up by artificial conditions which may at any time cease to control. To face this situation there are approximately 100,000 less freight cars than were available for service on March 1, and a total supply of motive power which has shown little increase for more than a year. During the recent peak load increased car loading and increased miles per car per day, offset the decrease in the number of cars and the motive power has stood a severe test exceedingly well. But the continuance of the improvement in efficiency that made possible the records of the past few months is dependent on the maintenance of the motive power and the rolling stock to a high standard of serviceability. With no reserve in the supply of either it is imperative that there be no slump in the output of repairs or the critical situation faced at the beginning of the summer will again be encountered, with winter conditions as an added handicap to its effective solution.

The Decline of Freight Business

Reports have been coming in from all over the country for some weeks to the effect that the freight business of the railways has been declining, but the statistics regarding car loadings down to the week ending November 6 do not indicate any larger declines of business than have occurred in past years. In the week ending November 6 the number of cars of freight loaded was 910,592. This is the highest record ever made in that week. The figure for the corresponding week of 1919 was 826,000, but car loadings in that week were reduced by the commencement of the coal strike. The number of cars loaded in the first week of November, 1918, however, was only 873,000. This was before the signing of the armistice and therefore at a time when the railways were exerting themselves to handle the maximum business possible, and yet the number of cars loaded in the first week of November, 1920, was 37,592 greater than in 1918. Evidently we shall have to await the statistics of later weeks before we shall see the effects of the decline of business reflected in car loadings. One reason, no doubt, why the car

loadings continue to hold up so long when there are general reports of declines in business is that the railways have continued up to the present time to transport all the coal they have been able to move, and coal under normal conditions constitutes about 35 per cent of their total tonnage. While there has been a large reduction in car loadings since the high water mark was reached in October there is as yet available no statistical evidence that the decline in the business moved recently has been any greater than it normally is at this time of year.

What the Public Expects

There has been a time when a slight recession in business necessitated an immediate curtailment in the purchase of materials and supplies by practically every railroad. Has the situation remained unchanged, is it still necessary for the railroads to forego every badly needed improvement during a period of falling prices and scramble for such portion of these necessities as they can procure during a period of great business activity? The railroads are the largest consumers of material and it is not too much to say that they can do more towards stabilizing the business activities of this country than any other one industry. The public expects more than the service of transportation from the railroads, it expects a broad constructive business policy that will not waver with every market fluctuation. Each railroad is confronted with a particular problem but what will be the effect if every railroad accepts the advice of its purchasing agent to defer the purchase of every possible item pending a further fall in prices? Will the much needed improvements cost less in the long run, and even if they should cost less, is that a circumstance to the importance of having the new equipment and the facilities in place, ready to function when traffic demands are again touching new high levels? This country wants its railroads equipped to move economically and expeditiously just a little more rather than just a little less business than may be anticipated. The purpose of recent legislation was clearly to enable the railroads to put their equipment in condition to do this irrespective of the current price of rail or any other item.

Selling Stock to Employees

The Lehigh Valley announced its plan for selling stock to its employees early in June of this year. To the present time advantage of the company's offer to assist the employees to purchase stock in the company on the instalment plan has been taken by 1,116 subscribers for a total number of 4,716 shares. The details concerning the plan and of the manner in which it is working out were given in a paper by A. F. Bayfield, treasurer of the company, read before the recent meeting of the Society of Railway Financial Officers and abstracted in last week's issue of the *Railway Age*. Mr. Bayfield went to some pains in his paper to emphasize that the shares which the employees secure through subscription under the plan are regular common stock; they are not treasury stock or a special stock issued to employees. Their purchase makes the employee a regular stockholder in the company. Mr. Bayfield gives some interesting figures as to the per cent of each class subscribing to date. The percentages are as follows: Officers and general office employees, 19; agents and station employees, 8; enginemen, firemen, conductors, etc., 1; maintenance of equipment department, 4; maintenance of way department, 1½. The Plumb plan advocates worked out a scheme whereby the employees could control the railroads. Their idea found most fruitful ground in the ranks of the train service employees. We have pointed out in these columns that one of the best ways in which the employees could control the railroads would be to become stockholders, or in effect buy them. The Lehigh Valley, by its plan, has offered to assist the employees to become owners. Nevertheless, the number of train service men subscribing, one per cent of the total number, has been less in proportion than for any other class of employees. This is the one pessimistic feature of the way in which the plan is working out. We feel, however, that the proportion of train service men subscribing will increase in the future as the men realize more and more the unfairness of Glenn E. Plumb's idea of getting something without a compensating obligation.

Five-Coupled vs. Mallet Locomotives

In deciding on the type of locomotive for heavy freight service, railroad officers usually find the problem narrows down to the selection of either the Santa Fe or Decapod or the Mallet type. Some roads have used Mallet locomotives consistently for many years; others with similar topography and traffic have clung to the ten-coupled simple engine. In few instances have the two designs been operated under conditions that permitted a fair comparison of their relative merits. The advocates of the Mallet claim that the tractive effort can easily be made greater than in any non-articulated engine. The divided wheelbase and better counterbalancing reduce the stresses in the track and the steam consumption is lowered by compounding. Furthermore the saving in the weight of the parts of the running gear due to division of the forces between two sets of machinery is stated to reduce the cost of maintenance. Many heavy simple locomotives give trouble due to excessive heating and wear in the driving box and rod bearings, but there is a question whether this is not offset by the reduction in the number of parts. The connection between the front and rear frames and the joints in the steam pipe prove troublesome in many designs of Mallet engines. The crux of the whole matter seems to be that the Mallet permits of hauling heavier loads while the increased cost of maintenance may or may not outweigh this advantage. A comprehensive comparative study of the cost of operation of the two types, taking into consideration the fuel consumption, crews' wages, costs of maintenance, mileage and reliability, would be of great value to roads that are confronted with the problem of choosing between the Mallet and the ten-coupled simple engine.

Extent of the Deferred Maintenance

No better evidence of the extent to which the maintenance of the physical properties of the railways has been deferred during the last few years could be desired than that presented by C. W. Gennet, Jr., in his paper on the rail situation, before the Western Society of Engineers, Chicago, which is abstracted on another page in this issue. Railway men have been aware of the fact that the properties were not maintained up to their normal standards for several years prior to the war and the accumulation of deferred maintenance mounted still more rapidly during the period of federal control. Whether or not railway men are prepared to agree with Mr. Gennet in his conclusion that rail renewals are over four years in arrears, they do realize that the accumulation of arrears is serious and that it must be taken up at the earliest possible opportunity, not only to insure safety of travel but economy of operation as well. The effects of this situation are reflected in several directions. There has been a feeling in the minds of many that the present sections of rail in use are too light for the loads imposed on them. If there is any

justification for this thought with new rail, this justification increases rapidly as the rail wears in service. With such a deficiency in renewals, the average weight of rail in service is also considerably below normal for if it had been replaced at the regular time a large part of it would have been superseded by heavier sections. One of the most serious aspects of this problem is the fact that while the rail is the most essential unit in the track structure, this accumulation of deferred maintenance has extended likewise the renewal of ties, the addition of ballast, the widening of the shoulders, and other elements entering into the construction of the roadway. The deficiency in these other elements places a still greater load upon the rail at the time when it is least able to withstand it. Coupled with the fact that shortages of labor and other deficiencies have also resulted in the rail receiving less attention in service, a gloomy picture might be painted. The fact that serious disaster has not occurred indicates the relatively large factor of safety in present day track construction. However, it is a basis of engineering design that this factor of safety is provided for emergency use only and not for day-to-day utilization. Every opportunity should therefore be taken to bring the entire track structure, including the rail, back to its normal relation to the service demanded of it at the earliest possible date.

Government Delays in Paying Railroads Injure Business

THE GENERAL BUSINESS situation is unsatisfactory, and the federal treasury department is helping to make it worse by the policy it is following in reference to government loans to the railroads and payments to the roads on account of the deficits incurred by them during the first six months of private operation.

The Transportation Act provided for loans of $300,000,000 to the railroad companies, which were to be made upon the certification of the Interstate Commerce Commission. The treasury department held that certain of the loans certified by the commission were not in technical compliance with the law, and therefore they have been held up. The deficits incurred by the companies in the first six months of private operation, during which the guaranteed standard return was continued under the provisions of the Transportation Act, aggregated about $660,000,000. The Interstate Commerce Commission was authorized by the law to certify to the treasury department the amounts which it should pay to the companies under this guarantee. Only about $234,000,000 on account of the deficits had been paid when the guarantee period expired on September 1, 1920. It was assumed that further installments could and would be paid under certificates issued by the commission before the total amounts of the deficits of the individual roads had been ascertained. The comptroller of the treasury has, however, advised the secretary of the treasury that payments on account of the deficits can now be made "only after a carrier has submitted its entire claim under the guarantee and the commission has ascertained the amount due thereon." The result is that the balance of over $400,000,000 due under the guarantees is being held up.

Because of the withholding of these funds many railway companies are unable to meet their current obligations, and are being obliged to postpone needed expenditures. Many of them owe large amounts to railway equipment and supply concerns, which, because they cannot get what is due them, are being forced to borrow large amounts at the banks. These conditions tend to continue and increase the general inflation of credit at the very time when the Federal Reserve Board and the banks are trying to reduce it. The board of directors of the Chamber of Commerce of the United States has issued a statement forcibly calling the attention of its members to the effects being produced by this situation. It certainly is a significant commentary on the way government business is transacted that differences of opinion between two branches of the government regarding the provisions of a law under which both are required by Congress to act should be allowed to create a situation which is producing such a demoralizing effect upon business.

The Interstate Commerce Commission is the body charged by the law with the duty and responsibility of saying what loans and payments should be made. Nobody has claimed that any payments it has authorized would give to the railroads anything which they will not sooner or later have to be given. The narrow technical interpretation placed on the law by the comptroller of the treasury should no longer be allowed to keep impounded in the treasury funds which the law intended should be transferred to the railroad companies, and which the business welfare of the country demands should be transferred to them.

Real Economy in Maintenance of Way

THE RESTORATION of the monthly balance sheet to a position of real importance on the railroads has served once more to make economy a matter of vital significance in all branches of railway service and no less in the maintenance of way department than elsewhere. How can you economize? is the question put up to every officer, and he should feel a keen personal responsibility to that end. Efforts to obtain economy in maintenance of way expenditures may be directed toward two distinct ends: (1) To effect an immediate reduction in expenditures; (2) to obtain permanent economy in the use of the material and labor applied. In no other department of a railway is it so easy to make a temporary, but entirely misleading, showing. The securing of purely temporary economy frequently is necessary, but unfortunately it can not be carried beyond a certain point without seriously interfering with the securing of lasting economy.

Immediate results can be obtained by a reduction in the force, which obviously carries with it a reduction in the application of material. In a certain measure this will be effective in increasing efficiency since men will work harder when they feel that their jobs are in jeopardy. On the other hand, more harm than good may be done in cases where such reductions in the force interfere with the operation of plans for permanent, all-year forces or other measures for improved personnel. The greatest danger in radical reductions in maintenance programs lies in the possibility that the neglect of some feature of the work involving relatively small outlay may result in damage to the property that can not be made good without a much greater subsequent expenditure. The axiom of maintenance of way is that "a stitch in time saves nine."

Permanent economy in maintenance of way work implies the expenditure of every dollar in a manner that will accomplish the greatest good. Analyzing this in greater detail it means the efficient utilization of all labor paid for and the intelligent selection and use of the material applied. The efficient use of labor involves two requisites: A maximum output per man and the intelligent direction of that output. The first is a matter of leadership. The second, like the use of material, is a matter of planning or, still better, engineering. As stated before, greater output may be obtained from the men by reductions in force or other means that are effective in times of labor surplus, but anxiety concerning the security of position is only one of several influences to be brought to bear in increasing the effectiveness of labor. Much may be accomplished through a more intimate human contact on the part of the supervisory forces.

The proper manifestation of sympathetic appreciation of the problems and interests of the laborers, proper housing and feeding, permanent employment, etc., are necessary if the men are to feel any real interest in the company's welfare. When the men are made to feel this interest they will use their brains as well as their muscles in the interest of the road.

The proper direction of labor and the application of materials is a matter of intelligent administration in all the supervisory ranks from roadmaster to president, and fundamentally it involves planning of the work for a considerable period in advance. It implies the making of expenditures today to avoid greater outlay tomorrow. Thus increased expenditures to use treated rather than untreated ties are not reflected in reduced tie renewals for five years or more. Consequently, it is difficult to institute a program for economy in the maintenance of way department that will immediately effect showings of a permanent character. Thus it is seen that there is danger of actual losses if reductions in maintenance of way activities are carried much beyond the point where the resultant reductions in force serve as a healthy incentive for increased effort on the part of the men retained in the gangs.

Dealing With Labor Under New Conditions

THE RELATIVE STRATEGIC POSITIONS of employer and employee in the industries of the United States, including the railroad industry, have been changing rapidly within recent months. From the time when the revival of business commenced in this country in 1915 until recently the demand for labor exceeded the supply. Most classes of labor took full advantage of this situation. The labor unions already in existence became more aggressive. Many new labor unions were formed. Extensive reductions in hours of work and advances in wages were secured. The general attitude of labor became one not merely of great independence, but of arrogance, and in most industries its efficiency declined. Many rules and methods were forced upon employers, including the railways, which reduced the output per man and greatly increased expenses.

The recent declines in general business have thrown many men out of work. In the recent national political campaign organized labor went out to "get" every member of Congress who had refused to do its bidding, with the result that most of the men it opposed were elected and most of the men it supported were defeated. These developments are, at least temporarily, transferring the control of the situation from labor to the employer. They are causing some optimism in the ranks of the employers and something approaching consternation among the leaders of the labor organizations. The American Federation of Labor recently has been giving much publicity to the information that it is driving radicals out and is considering means of co-operation between employers and employees which will reduce strikes and increase efficiency of production—information which, if correct, indicates a change of heart in the cases of many leaders of labor.

There is a natural tendency on the part of railroads and other employers to take advantage of the change in conditions to restore discipline and increase efficiency among their employees. It is right and in the public interest that this should be done. Strikes and labor inefficiency in the long run cost the workers and the public in general more than they do the employers. No effort should be spared to restore discipline and efficiency in the operation of the railroads and other industries.

There are, however, wide differences of opinion among employers as to the methods which should be used in trying to attain this result. Some believe that it is desirable for employers of all classes to adopt methods which they believe are adapted to break down the new labor organizations and cripple the old ones, and which will re-establish the dominance of the employer in the management of his business to the same extent that it prevailed before the war. Others believe that instead of employers seeking to re-establish discipline and labor efficiency by what, for lack of a better name, we may call "strong-arm" methods, they should take advantage of the present situation to try to put their relations with their employees, whether organized or unorganized, on a basis of better understanding and closer co-operation. They believe that labor organizations have come to stay, and that one of the greatest needs of modern industry and modern society is the education of the leaders and members of labor unions so that they will co-operate with employers in securing increased efficiency and economy in production, instead of so using their power when conditions are favorable as to reduce industrial efficiency and impose unfair burdens upon the public.

It is undoubtedly true that under present conditions it would be possible for many classes of employers, without in any way seeking the co-operation of labor, to make drastic changes which, at least temporarily, would greatly increase the workers' efficiency. This is less true in the railroad than in almost any other industry, but in no small measure it is true in the railroad industry.

It is always well, however, in dealing with such important matters, to take a long look ahead. It is unfortunately true that in the railroad industry there has grown up a very serious and widespread spirit of antagonism between the managements and most classes of the employees. In every class of employees, however, there are many men who are loyal to the companies, who believe it is the duty of the employee to render good service to his employer and who have no use for the philosophy of the Plumb plan and other strange doctrines. It is quite conceivable that under present conditions the managements of many railroads or the railroads as a whole might adopt methods in dealing with labor which would not only increase the bitterness of the employees who already are hostile, but which would tend to alienate the employees who still are loyal. On the other hand, it is quite conceivable that the managements of many railroads, or the managements of the railroads as a whole, might take advantage of present conditions to adopt policies which would strengthen the loyalty of employees who already are loyal and reduce the spirit of antagonism on the part of other employees.

The fact should be frankly recognized that the labor conditions and the attitude of the employees which recently have prevailed have not existed without cause, any more than the former widespread public sentiment against the railways existed without cause. The present attitude of railroad labor undoubtedly is due principally to two causes—first, to unwise and unjust policies adopted by the managements in many cases in dealing with the employees, and, second, to propaganda among the employees by labor leaders and radical agitators which the managements have not counteracted by the use of effective educational methods.

There is a strong tendency on the part of many employers to assume that practically all the fault for bad labor conditions has been due to bad labor leadership and to the unreasonableness and selfishness of working men. Even if this assumption were correct it would not follow that it was expedient for employers under present conditions to make ruthless war upon labor as a large part of the working class within recent years has made ruthless war on the employer. This would be a direct invitation for labor recklessly to strike back as soon as it again got the power to do so, and in the long run would do more harm than good. But the assumption that the past and present bad labor conditions have been entirely, or perhaps mainly, due to bad labor leadership and

the unreasonableness and selfishness of working men is wholly without foundation. Past and present bad labor conditions on the railroads and elsewhere have been largely, and perhaps mainly, due to the fact that employers and the representatives of employers have failed, when they had the opportunity, to do their duty in adopting measures which would enlighten employees regarding the true selfish interest of the workers as a factor in industry, and which would secure their co-operation instead of their opposition with respect to measures designed to promote industrial peace and efficiency.

This is a good time for the railroads to begin to try to get rid of many of the absurd rules and restrictions which recently have been adopted nominally for the protection of labor, but which have the actual effect of causing many millions of dollars to be paid out for labor which is not performed. It is also, however, a good time to attempt to adopt methods adapted to reduce the labor turn-over, to secure the interest and co-operation of labor in promoting efficiency and to educate employees regarding their true interest as individuals and as members of the working class.

There is a scriptural injunction regarding the unwisdom of putting new wine into old bottles. It behooves railroad managers to recognize the fact that pre-war conditions have passed never to return, and that the post-war labor problem, like other post-war problems, requires not pre-war, but post-war, treatment.

The Wide Variations in Increased Car Efficiency

THE RAILWAYS as a whole have made remarkable progress for some months in increasing the efficiency with which they have used freight cars. The statistics of the Interstate Commerce Commission disclose, however, that in every section some railways have greatly increased the average amount of freight service rendered with each car on their lines, while neighboring roads have shown actual reductions in the average service rendered with each car.

The freight business is now declining. Probably, however, it will not be long until it will again tax the roads to their capacity. Meantime, it will behoove the executive and operating officers of many railways to ascertain why the increases in operating efficiency gained on their roads, as indicated by the statistics, have been so much less than those gained by other railways. Nobody would criticize the management of an eastern railroad for not moving cars as many miles per day as they are moved on the transcontinental lines. Local conditions in the East make it impossible to move cars as many miles per day as in the far West. But while it is easy to explain the differences in average miles per car per day and in average tons per car in different sections, it is not easy to understand why in every section there are wide differences in the increases in car efficiency obtained.

One explanation, no doubt, is that in every part of the country some railways, because of greater foresight or financial resources, have kept the development of their power, yards and terminals more nearly abreast of the growth of traffic than others in the same territory. We believe, however, that anybody who carefully analyzes the figures will discover a relationship between the number of cars each railroad had on its lines and the increase or decrease in efficiency with which it used cars. In almost every case where a railway showed a large increase in the efficiency with which it used cars the statistics disclose that the cars it had on its lines were less than 100 per cent of those it owns. On the other hand, in almost every case where a railway showed a decrease in the efficiency with which it used cars the statistics disclose that it had on its lines substantially more than 100 per cent of the cars it owns.

One of the greatest increases in average net ton-miles per car per day made by the large railways was obtained by the Chesapeake & Ohio. In the first eight months of 1919 its net ton-miles per car per day were 584 and in the same months of 1920 they were 919, an increase of 57 per cent. This was due almost entirely to the fact that it increased its average miles per car per day from 24.3 to 36.4, or 50 per cent. As a result of this increase in car efficiency, the total tons moved one mile by it were 27 per cent greater than in the first eight months of 1919, in spite of the fact that in the first eight months of 1920 it had on its lines only from 66 to 77 per cent as many cars as it owned.

Another good record made was that of the Illinois Central. Its net ton-miles per car per day in the first eight months of 1919 were 575 and in 1920, 800, an increase of 39 per cent. This improvement was chiefly due to the fact that it increased its average miles per car per day from 31.1 to 40.4, or 30 per cent. The total number of tons hauled one mile by it were increased 33 per cent, although the number of cars on its line varied from 76 per cent to a maximum of 83.4 per cent of the number it owned.

Still another good record in increasing net ton-miles per car per day was made by the Northern Pacific. Its net ton-miles per car per day in the first eight months of 1919 were 486 and in 1920 they were 671, an increase of 38 per cent. Its total ton mileage was 12 per cent greater than in 1919, although it had only 62 to 83.4 per cent of the number of cars it owns upon its lines. This was chiefly due to an increase from 25 to 33.6, or 34 per cent, in average miles per car per day.

When we turn to the railways which had actual declines in net ton-miles per car per day we find that in most cases there were roads which almost throughout the first eight months of 1920 had upon their lines a number of cars exceeding their total ownership. One large system in seven of the eight months had from 2 to 16.5 per cent more cars than it owned. The net ton-miles per car per day on this railway decline from 438 to 435. This was due to a decline in the average load per car, since the average miles per car per day were the same in both years, 18.9.

Another important railway had upon its lines from 39 to 68 per cent more cars than it owned. Its average tons per car per day decline from 303 to 278, this being due apparently to the fact that its average miles per car per day declined about 16 per cent.

Another road had from 12 to 47 per cent more cars than it owned. Its average miles per car per day declined 47 per cent and its net ten-miles per car per day 45 per cent.

Another railway had upon its lines from 100 to 121 per cent of its total ownership of cars. Its average net ton-miles per car per day declined from 450 to 439, chiefly because its average miles per car per day declined from 26 to 24.2.

We believe these statistics have significance in relation to an important question of operating policy. This question is whether the management of each railway should not, in the interest of that railway itself as well as of the railways as a whole, strive to prevent the number of cars upon its lines from greatly exceeding the number of cars it owns. Is it not a fact that many railways persist in holding so many cars which other railways need and in accepting at the same time so many loaded cars from connections that they unnecessarily congest their own lines and thereby not only reduce the amount of service that they themselves can get out of each car, but reduce the total amount of business they are able to handle? Of course there are not a few railways which do not own as many cars as they really need to handle their own business, and their inevitable tendency when business is heavy is to keep more cars than they own regardless of the fact that this often works a hardship upon the roads whose cars they keep.

It seems a fair assumption, however, that most of the

larger and stronger systems have sought with approximate success to provide themselves with cars in proportion to the capacity of their other facilities. Do not the figures indicate that a railway which has done this both increases its expenses and reduces the amount of business it can handle if it persists in holding and accepting cars substantially in excess of the number it owns?

Comparisons of this kind always are invidious, and it is not our purpose to imply that the railways which made the greatest increases in ton-miles per car per day were the most efficiently operated, or that those which showed actual reductions in ton-miles per car per day were not efficiently operated. Local conditions often affect the results obtained on different railways and on the same railway at different times to an extent that only their own officers realize. Nevertheless, the chief executives of the railways, when they started their drive a few months ago to increase the amount of freight moved, expressly recognized the fact that one of the very best ways to increase railway efficiency was to speed up the cars. If they were right it necessarily follows that anything which tends to prevent an increase in the average miles per car per day is an obstacle to increased efficiency and if it be true that in many cases individual railways got and kept upon their lines so many cars as to interfere with increasing the average miles per car per day, it must follow that this policy was a hindrance to increasing the efficiency of those individual railroads, as well as of the railroads as a whole.

It recently has been urged with much force that the Car Service Rules should be so revised as to make more nearly certain that their enforcement will secure to each railway at all times the use of more nearly the equivalent of the cars it owns, and that after this has been done measures should be adopted to make sure the rules will be observed. We believe that past experience, and especially the experience of the last few months, strongly supports the view that in the long run strict enforcement of rules adopted to secure to each railway the use of the equivalent of the cars it owns would be beneficial not only to many railways which usually in periods of heavy business do not get the use of as many cars as they have provided, but also to many railways whose managements find it difficult to constrain themselves to adopt the measures necessary to prevent excessive numbers of cars from accumulating upon their rails.

New Books

Export Register of the Federation of British Industries. 328 pages and catalogue section of 312 pages, illustrated, 7 in. by 9½ in. Bound in cloth. Published by the Federation of British Industries, 39 St. James street, London, S.W.-1, England.

The trade organization movement in Great Britain has made great progress in recent years. One of the most notable recent developments was the inauguration of the Federation of British Industries in the summer of 1916. This body has enrolled 1,300 members including 200 trade associations. The Export Register recently published by the federation is probably the most comprehensive directory of British industrial firms yet prepared. The industries are divided into 20 groups which are in turn subdivided according to the specialized branch of the industry which the producer serves. A list of companies, firms and their agents with sufficient information to enable the buyer to get in touch with the nearest agent is given. Another section of the book is devoted to a very complete list of products with the names of the manufacturers represented in the federation. An extensive section devoted to advertising enables the individual manufacturers to give further information concerning their wares. The book might well serve as a model for American export associations in furthering their interests in the foreign field.

Bituminous Coal Storage Practice, by H. H. Stock, C. W. Hippard and W. D. Langtry. Bulletin No. 116, Engineering Experiment Station, University of Illinois, Urbana, Ill. 150 pages, 6 in. by 9 in., bound in paper.

The growing inability to maintain a steady flow of coal from the mine to the consumer to take care of the fuel demands of the country currently, especially during the winter season, has attracted wide interest to the problem of storing large quantities of coal near the points of consumption. One of the most serious handicaps to the storage of bituminous coal is the constant danger of spontaneous combustion. A study of the causes of spontaneous combustion and methods of prevention has been undertaken by the Engineering Experiment Station of the University of Illinois and has been in progress for several years. Considerable information on the subject was included in Circular No. 6, on "Storage of Bituminous Coal," issued in 1918 and Bulletin No. 116, contains much additional information which has been obtained by a study of the circumstances surrounding a considerable number of fires in stored coal as well as of methods of inspecting storage piles which have been followed with success in the prevention of fires. The results of these studies are given in detail and the bulletin is invaluable to any large user of coal who now has storage piles or contemplates the storage of coal in quantity.

Proceedings of the American Wood Preservers' Association. 1920. 6 in. x 9 in. 370 pages, illustrated. Bound in cloth or paper. Published by the American Wood Preservers' Association, F. J. Angier, secretary, Mt. Royal Station, Baltimore, Md.

The American Wood Preservers' Association has two distinct functions; (1) the study of the physical laws governing timber preserving processes and their application in the perfection of the work being done on a commercial basis and (2) the general education of the public in the value of timber treatment and the proper use of treated wood. These two objects were carried out in the program of the sixteenth annual meeting held in Chicago on February 10-12, inclusive, as recorded in this volume. The papers and reports presented and discussed are divided among scientific studies of preservative processes, the presentation and discussion of specifications for preservatives and processes, and the records of results secured with treated timber, such as railway ties, under actual service conditions over periods of years. Under this last head the most notable example in the 1920 proceedings is that of some creosoted piles subjected to the action of marine borers for a period of 29 years in Long Wharf, Oakland, Cal. Thirty-eight pages cataloguging the tie service records in the files of the United States Forest Service form an important part of this volume,as in preceding years. A distinctive feature of this year's volume is a treatise on the fungi which attack tie timber, by C. J. Humphrey. This constitutes a clasification of a large number of species of these fungi with an account of descriptive characteristics and destructive influences which will enable the student to distinguish between the dangerous and harmless species. This description is amplified by the inclusion of eight pages of plates, including three in colors. This feature of the proceedings is being published by the association under a separate cover with the title "The Decay of Ties in Storage." The statistics on the quantities of wood treated and the preservatives used in the United States in 1919 by R. K. Helphenstine, Jr., of the United States Forest Service, forms a characteristic and valuable feature of this volume.

I. C. C. Orders Increase in Intrastate Rates

Refusal of New York to Permit Increases Corresponding to Interstate Advances Held to Be Discriminatory

WASHINGTON, D. C.

PASSENGER, SLEEPING car and parlor car fares, baggage charges and the rates on milk and cream applicable to intrastate transportation in New York, except local commutation fares, are ordered increased in amounts corresponding to the increases recently allowed by the Interstate Commerce Commission for interstate traffic, in the commission's decision in the New York passenger fare case, announced on November 17. The commission finds that the rates required by state authority, lower than the corresponding interstate rates as increased under its decision in Ex Parte 74, are "unduly prejudicial to interstate passengers and shippers, unduly preferential of intrastate passengers and shippers, and unjustly discriminating against interstate commerce," and the carriers are ordered to remove the discrimination by making the higher rates effective on not less than five days' notice, on or before December 18.

The New York case is the first of a series of 17 involving the failure of the state authorities to allow intrastate increases corresponding to those allowed by the Interstate Commerce Commission. The commission's decision is, therefore, regarded as probably constituting a precedent for the decisions in the other cases, which are in various stages of progress. However, there are different sets of circumstances in the various cases which conceivably might affect the decisions. In New York the freight rates were not involved. The state has a passenger fare law prescribing a rate of 3 cents a mile, while the federal commission had allowed 3.6 cents, but the state commission has authority to permit fares in excess of the statutory rate upon a showing that existing rates are not compensatory. In the Illinois and Wisconsin cases, which have been argued before the commission, state fare laws are involved which allow no discretion to the state commissions and in some states the commissions have allowed increases in freight rates which, while less than the interstate increases, might be considered to present a less obvious case of discrimination than the passenger fare cases.

In the opinion, by Commissioner Ford, the commission refers to the Shreveport decision of the Supreme Court as sustaining its former position that it already possessed incidentally the power of regulating intrastate commerce so far as it affects interstate commerce and says that the general obligation resting upon it has been put in the form of a mandate by the new law.

The entire question of jurisdiction will certainly go to the Supreme Court for adjudication, as the National Association of Railway and Utilities Commissioners has taken an active part in the hearing of the various state cases before the commission and has appointed a committee on litigation to carry on the fight to preserve the jurisdiction of the state authorities through the courts.

Report of the Commission

An abstract of the opinion by Commissioner Ford follows:

In pursuance of our findings in Ex Parte 74, Increased Rates, 1920, 58 I. C. C., 220, we authorized within a region that includes the state of New York an increase of 40 per cent in the interstate freight rates; 20 per cent in the interstate passenger fares, baggage charges, and rates on milk and cream; and also a surcharge amounting to 50 per cent of the charge for space in sleeping and parlor cars, to accrue to the rail carriers.

Thereupon the steam railroad companies serving the state of New York made formal application to the Public Service Commission of the State of New York, Second District, for permission to file, effective on five days' notice, tariff supplements providing increases in the rates, fares, and charges applicable to interstate traffic in the state of New York corresponding with those authorized in our report. So far as the application related to rates and charges for the transportation of freight except milk it was granted by the Public Service Commission, by an order entered August 19, 1920, and the increases became effective August 26, 1920, contemporaneously with the increases in interstate rates. But so far as it related to passenger fares, sleeping-car and parlor-car fares, baggage charges, and rates on milk and cream, the application was denied by the Public Service Commission. Thereafter the principal steam railroads serving the state of New York filed with us a petition for relief in accordance with the provisions of section 13 of the interstate commerce act.

This case raises again the question whether in regulating interstate commerce, under authority reposed in us by Congress, we have incidentally the power of regulating intrastate commerce so far as it affects interstate commerce. In the Shreveport Case, 23 I. C. C., 31, we held that we did possess that power by act of Congress.

The position we took was sustained by the United States Supreme Court, and the principle on which we acted then continues to be our guide. But since then the general obligation resting upon us to exercise control over intrastate commerce so far as it affects interstate commerce has been put in the form of a mandate by section 13 of the interstate commerce act, as amended by the transportation act, 1920.

It has been urged in opposition to the application of this principle to the pending case that such incidental jurisdiction as we may possess over intrastate rates is contingent upon proof that discrimination exists affecting particular persons or localities. But inasmuch as the basis of our jurisdiction is our power to regulate interstate commerce, it follows that the decisive factor is whether the rates under consideration injuriously affect interstate commerce. It is no answer to this to say that if this conclusion be admitted it may have the effect of completely displacing state jurisdiction over state commerce. There may be cases in which intrastate rates affect interstate commerce injuriously in ways so manifest as to make them subject to our control. There may be cases in which the connection of intrastate rates with the movement of interstate commerce is so remote and unimportant that we may properly disregard it. But in every case which puts in question intrastate rates, the decisive factor is whether or not they affect interstate commerce injuriously to a considerable extent. If they do they are brought under our jurisdiction and made subject to our control, even although the whole rate structure of a state should be involved.

It has not happened heretofore that we have had occasion to make such an extensive exercise of our authority as is now contemplated, and we could not be moved to do so save by the most cogent reasons. Such reasons have been supplied by the situation in which the transportation interests of the country were placed and the action taken by Congress to relieve that situation.

Our findings in Increased Rates, 1920, supra, were responsive, as the report shows, to legislation enacted by the Congress as part of the transportation act, 1920, approved February 29, 1920, now incorporated in the interstate commerce act as part of section 15a thereof.

In accordance with these statutory provisions we designated four rate groups, one of which embraces the territory bounded on the west by the Mississippi river and on the south by the Ohio river and the main line of the Norfolk & Western; and we authorized increased rates, fares, and charges that were designed to enable the carriers as a whole in that rate group, "under honest, efficient, and economical management and reasonable expenditures for maintenance of way, structures, and equipment," to earn an aggregate annual net railway operating income equal, as nearly as may be, to 5½ per cent upon the aggregate value

of the railway property of such carriers in that group, plus one-half of 1 per cent of that aggregate value for improvements, betterments, or equipment, chargeable to capital account.

Congress has taken, as the basis for determining a fair return for the railroads, the aggregate value of the railway properties in each group held for and used in the service of transportation. In making a tentative finding of the value of the railway properties in each group, for the purposes of our report, we included all the railway property of each carrier held for and used in the service of transportation. This should not be construed as holding that jurisdiction over intrastate rates and fares has been taken away from the state and reposed in us. We find nothing in the law to indicate that such was the intent of Congress. But Congress has directed that we allow rates that will yield in the aggregate a return of 5½ or 6 per cent upon the value of the railway property in each of the groups. There can be no doubt of the power of Congress to devise and provide for carrying into effect a plan for assuring to the nation's interstate railroads a fair return upon the value of their property; and the full control by Congress of this matter is not to be denied on the ground that the carriers' aggregate earnings are a commingling of intrastate revenue and interstate revenue.

The record shows that the refusal of the state of New York to permit the carriers to increase the rates and fares here in controversy to the extent approved by us is costing the railroads between $11,000,000 and $12,000,000 annually. In other words, the annual earnings of the interstate carriers operating in New York are now between $11,000,000 and $12,000,000 less than they would be if the general level of rates and fares approved by us had become effective on intrastate traffic; and to that extent the declared purpose of Congress is defeated by a preferential basis of rates and fares maintained by authority of the state of New York.

This proceeding presents a practical question which we have endeavored to deal with in a practical way. The needs of these interstate carriers for revenue to enable them to provide adequate transportation service and facilities are immediate and, in the interest of the public, can not be permitted to await the consideration in detail of individual fares, charges, and rates. The record shows that the respondent carriers perform the services here in question under substantially similar circumstances and conditions, whether in respect of interstate or intrastate transportation; and that the lower basis of intrastate fares, charges, and rates results in undue prejudice against interstate passengers and shippers and unjust discrimination against interstate commerce. The present record warrants the findings hereinafter made. Those findings are without prejudice to the right of the authorities of the state of New York or of any other interested party, to apply in the proper manner for a modification of our findings and order as to any fares, charges, or rates on the ground that the latter are not related to the interstate fares, charges, or rates in such a way as to contravene the provisions of the interstate commerce act.

Passenger Fares

The record leaves no doubt as to the unduly preferential character of the intrastate fares and charges now in effect in the state of New York. Interstate passenger fares are in general on a basis of 3.6 cents per mile as maximum. Passengers traveling between points in the state of New York and points in other states may be required to pay 3.6 cents per mile, whereas passengers traveling within the state of New York pay only 3 cents per mile. The basis of 3.6 cents applies on intrastate traffic in every state bordering on the state of New York. In other words, intrastate passengers in New York enjoy a basis of fares distinctly lower than those exacted of interstate travelers in the same territory, often riding in the same trains, and also lower than the fares paid by intrastate passengers in neighboring states. The record shows beyond question that there are no transportation conditions in the state of New York that justify lower rates or fares, on the whole, than those applicable in neighboring states, or lower than the interstate rates and fares between points in New York and points in other states.

The situation is well illustrated by the fares between New York City and Buffalo. Of the several available routes connecting these points that over the New York Central is intrastate while the others are interstate. Exclusive of war taxes it appears that since August 26, 1920, the fare has been $14.27 over the interstate routes and $13.16 over the New York Central, a difference of $1.11 in favor of the passenger using the latter route. In the case of a passenger occupying a lower Pullman berth the difference is increased to $2.36. Moreover, a passenger traveling from New York City to a point west of Buffalo can, by buying a ticket to Buffalo over the New York Central and buying another ticket at Buffalo to his destination, defeat the through interstate fare. Representatives of the carriers stated that the inevitable result of this situation would be the reduction of the interstate fare from New York to Buffalo to the level of the intrastate fare, and that this would tend to disrupt the entire fabric of the interstate passenger fares in the territory involved.

Inasmuch as the excess-baggage charges are arranged upon a scale bearing a fixed relationship to passenger fares and correspondingly graded in amount, such charges are governed by the passenger fares, and any discrimination in passenger fares would necessarily involve a discrimination in excess-baggage charges. This statement concerning the manner in which the baggage charges are determined is based upon the schedule of rates and charges of the carriers now on file in the commission's office.

Rates on Milk and Cream

The expression "milk and cream" as used herein includes milk, cream, skim milk, buttermilk, condensed milk, evaporated milk, and pot cheese, and for the purpose of indicating the effect upon interstate commerce and upon the revenues of carriers, of the discrimination under consideration, we give illustrations as follows:

The New York Central operates nine milk trains daily into the New York City district, carrying 1,300,000 quarts of milk and cream, of which approximately 75 per cent is shipped over intrastate routes and approximately 25 per cent over interstate routes.

Nine or ten carloads of milk and cream per day originate on the Ulster & Delaware, which extends from Kingston, N. Y., northwesterly to Oneonta, 107 miles. The cars are delivered to the New York Central at Kingston and, together with six or seven cars originating on a branch of the latter carrier extending southwesterly from Kingston, are there formed into a milk train which moves to New York over the tracks of the West Shore line. This route runs through a part of the state of New Jersey, the West Shore terminals being at Weehawken, N. J., and is therefore an interstate route. Shipments of milk and cream also originate at points along the east side of the Hudson in territory not far distant from that served by the Ulster & Delaware and move to New York over the intrastate route of the New York Central along the east bank of the Hudson river. On shipments using the interstate route the rates charged are 20 per cent higher than those over the intrastate route, although there is no justification from a transportation viewpoint for a difference in the rates.

Again, a milk train is operated by the Delaware & Hudson from Eagle Bridge, N. Y., which is northeast of Troy, in a northerly direction, a distance of 52 miles, to Castleton, Vt., thence southwesterly to Troy, N. Y., where it is delivered to the New York Central. Between Eagle Bridge and Castleton this train crosses the state line three times and again shortly after leaving Castleton for Troy. All shipments received before the last crossing of the state line are interstate shipments, the others intrastate shipments. On milk and cream in this train which happens to cross a state line charges must be paid substantially in excess of those applying on intrastate shipments moving in the same train. There is no doubt that shipments of milk and cream originating in western Vermont and shipped to the New York City district over interstate routes are in direct competition with shipments of the same commodities originating in the eastern part of the state of New York and moving to the New York City district over intrastate routes.

Furthermore, there is a substantial portion of the state of New York, which embraces, generally speaking, the central portion of the state, from which milk and cream may move to the New York City district over either interstate routes or intrastate routes. For the purpose of illustration we may refer to the line of the New York Central extending from Albany to Syracuse with a branch line extending from Syracuse southeasterly to Earlville, and to the line of the Delaware & Hudson from Binghamton to Albany. From this whole territory shipments of milk and cream may move to the New York City district over intrastate routes. From the same general territory, however, shipments may be moved over the interstate routes of the New York, Ontario & Western, the Delaware, Lackawanna & Western, and the Lehigh Valley railroads. Each of these roads has one or more points of contact with the New York Central's main line between Utica and Syracuse and with its branches in that territory. Shipments moving over the interstate routes now pay charges 20 per cent higher than those charged for shipments from substantially the same territory moving over intrastate routes.

The rates on milk and cream to the New York City district have been considered by us at various times. In Milk and Cream Rates to New York City, 45 I. C. C., 412, we found that the interstate rates on this traffic were unreasonable and unduly prejudicial to shippers from near-by points and unduly preferential of shippers from distant points; and we prescribed a scale of mileage rates, in blocks of 10 miles each, for distances up to 630

miles. The prescribed basis was also adopted by the New York Central on intrastate traffic, resulting in a uniform scale of rates over interstate and intrastate routes. By the application of the 20 per cent increase to interstate rates without a corresponding increase in intrastate rates, this uniformity has been destroyed.

Commutation Fares

The record contains comparatively little evidence on the subject of commutation fares, but so far as it goes it discloses facts in the presence of which we can not presume that the existing rate structure is just and reasonable in its established relationships and that it should be adopted as the basis upon which a general advance should be authorized, as in the foregoing particulars. We shall therefore reserve for future consideration this branch of the case, and as to it we do not now make any finding or enter any order, but we shall keep the case open for further investigation, limited to the subject of commutation fares and commutation baggage charges in the state of New York as to the question whether they cause any undue or unreasonable advantage, preference, or prejudice as between persons or localities in intrastate commerce on the one hand, and interstate or foreign commerce on the other hand, or any undue, unreasonable, or unjust discrimination against interstate or foreign commerce.

Findings

Subject to the above reservation in the matter of commutation fares and commutation baggage charges, we are of the opinion and find that the increases made by the carriers under Ex Parte 74, relating to passenger fares and baggage charges and now in effect, result in reasonable passenger fares and baggage charges for interstate transportation within the territory involved in this proceeding, and that the failure of the carriers within the state of New York to increase the standard intrastate fares and charges correspondingly has resulted in the past and will result in the future: In intrastate fares and charges lower than the corresponding interstate fares and charges; in undue prejudice to persons traveling in interstate commerce within the state of New York and between points in the state of New York and points in other states; in undue preference and advantage to persons traveling intrastate in New York, and in unjust discrimination against interstate commerce.

We further find that said undue prejudice and unjust discrimination should be removed by making increases in said intrastate passenger fares and baggage charges which shall correspond with the increases heretofore made as aforesaid in interstate passenger fares and baggage charges.

We further find that the increases made by the carriers under Ex Parte 74, relating to space occupied by passengers in sleeping and parlor cars, result in reasonable charges for the occupancy of such space by passengers traveling in interstate commerce in the territory involved in this proceeding, and that the failure of the carriers within the state of New York to increase correspondingly the charges for like space for passengers traveling in intrastate commerce has resulted in the past and will result in the future: In intrastate charges lower than the corresponding interstate charges; in undue prejudice to persons traveling in interstate commerce within the state of New York and between points in the state of New York and points in other states; in undue preference and advantage to persons traveling intrastate in New York, and in unjust discrimination against interstate commerce.

We further find that said undue prejudice and unjust discrimination should be removed by making increases in said intrastate charges which shall correspond with the increases heretofore made as aforesaid in interstate charges.

We further find that the increases made by the carriers under Ex Parte 74, relating to rates on milk and cream, and now in effect, result in reasonable rates on milk and cream for interstate transportation within the territory involved in this proceeding, and that the failure of the carriers within the state of New York to increase the intrastate rates on milk and cream correspondingly has resulted in the past and will result in the future: In intrastate rates lower than the corresponding interstate rates; in undue prejudice to shippers of milk and cream in interstate commerce within the state of New York and between points in the state of New York and points in other states; in undue preference and advantage to shippers of milk and cream in intrastate commerce in New York, and in unjust discrimination against interstate commerce.

We further find that said undue prejudice and unjust discrimination should be removed by making increases in said intrastate rates on milk and cream which shall correspond with the increases heretofore made as aforesaid in the rates on milk and cream shipped in interstate commerce.

We further find that, whether the aforesaid passenger fares, baggage charges, surcharges, or rates on milk and cream pertain to transportation in interstate commerce or to transportation in intrastate commerce, the transportation services, in each instance, are performed by the carriers under substantially similar circumstances and conditions.

An appropriate order will be entered.

Commissioner Eastman Dissents

Commissioner Eastman gave a dissenting opinion in part as follows:

I am unable to join in the decision of the majority, because I believe it goes beyond our lawful power.

It is, I think, our duty to conclude that when the Congress expects us to exercise new powers at the expense of the states, we shall be told to do so in plain and unmistakable terms.

In defining our jurisdiction, at the very beginning of the interstate commerce act, paragraph 2 of section 1 states that the provisions of the act shall not apply—

To the transportation of passengers or property, or to the receiving, delivering, storage, or handling of property, wholly within one State and not shipped to or from a foreign country from or to any place in the United States as aforesaid.

The language is unequivocal, and there is no subsequent provision which runs counter to the limitation. It is interstate and not intrastate transportation with which the act has to do. Under paragraph 4 of section 13 it is true that we may prescribe intrastate rates, but only for the purpose of removing unjust discrimination against interstate commerce. Plainly this power springs from and is merely an incident of the duty to regulate and protect interstate traffic.

Turning to section 15(a), our duty to establish rates which will enable carriers to earn a fair return upon the aggregate value of their railway property relates and is confined to *interstate* rates. Without regard to the limitation of section 1, there is no "clearly manifested purpose" to extend our authority over intrastate rates, and certainly there is none in view of this limitation. Nor is such a conclusion inconsistent with a reasonable interpretation and practical application of this section. A rule is laid down for our guidance, but our duty is confined to interstate rates and it is a duty merely to maintain such rates at the level which will yield the return desired, assuming that the states will exercise their own power justly and taking into consideration our right to correct intrastate rates which unjustly discriminate against interstate commerce.

Following our decision applications were filed for authority to make like increases in intrastate rates, fares, and charges. With a few minor exceptions the freight increases sought were permitted at once to become effective, as was possible under the state statutes, without indication of approval or disapproval and subject to complaint or investigation in the future. The situation was different as to passenger fares. By a provision of the New York law there are limited to a maximum of 3 cents per mile, but the state commission pointed out that it could permit fares in excess of this limit upon a showing that existing fares were insufficient to afford reasonable compensation for the service rendered. Notwithstanding this intimation the carriers offered no evidence and did not assert that the fares were insufficient, but relied upon the fact that we had permitted an increase of 20 per cent in the interstate fares. Under the circumstances no course seemed open to the New York commission except to deny the application, and this it did upon the sole ground of lack of evidence.

There is no basis for a belief that the New York commission is disposed to deal other than justly with the carriers, or that it would have been unduly exacting if they had undertaken to show insufficiency of compensation. Upon the facts before us and in a spirit of comity the carriers might well be remitted to the state tribunal to exhaust their remedies before coming to us for action which will deprive the state of all authority over intrastate fares so long as our order remains in effect. In this view of the matter whatever losses in revenue the carriers may have suffered are chargeable to their own default.

If the issue before us is not essentially different from the issue which has been considered in prior "Shreveport cases," it will, I think, be conceded that while the evidence may be sufficient to justify action against certain intrastate fares and charges, it is not sufficient to justify the all-embracing action which the majority approve. This is indicated by the fact that the carriers have not seen fit to rely upon preference to persons or communities, none of which are complaining, but have rested their case chiefly upon the allegation that the intrastate rates are upon a lower level than the interstate and fail to contribute their fair share of the railway operating income to which we have found that the carriers in the eastern group are entitled.

We were there faced with the necessity of providing without delay the additional revenue needed to bring the aggregate income of the carriers to the level prescribed by the act, and we adopted the expedient of authorizing horizontal percentage increases in rates, fares, and charges within and between certain territorial groups. This expedient was necessary, for any detailed consideration of individual rates

was impracticable in the time available. Nevertheless, it should be noted that the act does not prescribe this method of increasing rates, that our duty under section 15(a) is a continuing duty, and that our finding was only that the method employed would "result in rates not unreasonable in the *aggregate*." It rested upon the assumption that extensive readjustment would probably be necessary. It is not equivalent to a finding that individual rates, fares, and charges, or classes of rates, fares, and charges, so increased and now in effect, are just and reasonable. Still less does it follow as a necessary conclusion, where state authority is involved, that the passenger fares within any particular state must be increased 20 per cent in order to produce their fair share of railway operating income. But if our decision in Increased Rates, 1920, is not evidence of that fact, certainly there is no other evidence of record upon which such a conclusion can be based.

I am unable to escape the conclusion that, even if the theory of the carriers as to our power under section thirteen be accepted, at least it should be shown, by evidence sufficient to justify a valid opinion, that the intrastate fares and charges in question are not now furnishing adequate compensation for the service rendered, judged by the standard which the Congress has set forth, and that an increase of twenty per cent is necessary to this end.

Loans From Revolving Fund

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION, Division 4, has issued a report finding that the requirement in the provisions of the transportation act relating to loans from the revolving fund that the Interstate Commerce Commission must certify that the applicant for a loan is unable to provide itself with the funds necessary from other sources, as a prerequisite to a loan, refers to a practical inability to be determined upon the facts of each case and that such facts should be furnished by the applicants. A number of loans which had been approved by the commission were held up by the Treasury Department because the commission had certified that the railroads were unable to borrow money elsewhere except at excessive rates of interest. The commission then held a hearing for the purpose of considering upon what facts it would be warranted in issuing an unqualified certificate. The report of Division 4 is as follows:

"The matter of loans from the revolving fund created by paragraph (e) of section 210 of the transportation act, 1920, to carriers by railroad subject to the interstate commerce act being under consideration, we issued, September 16, 1920, an order for a hearing on September 23, 1920, in the matter of the proper interpretation of paragraphs (a), (b) and (c) of section 210, as amended by section 5 of the sundry civil appropriations act, June 5, 1920, particularly the finding required by the concluding clause in paragraph (b) as thus amended, to wit: that the applicant, in the opinion of the commission, is unable to provide itself with the funds necessary for the aforesaid purposes from other sources.

"It was urged on behalf of the carriers and others who appeared before us that

"(1) The legislative intent of section 210 of the transportation act, 1920, was to aid the railroads of the country in increasing their equipment and other facilities as rapidly as possible and thereby enable them properly to serve the public during the transition period immediately following the termination of federal control.

"(2) The legislative intent in the requirement of a finding 'that the applicant, in the opinion of the commission, is unable to provide itself with the funds necessary for the aforesaid purposes from other sources,' was to give preference to the financially weak railroads; but if for any reason the weaker railroads can not or do not avail themselves of the preference, the fund would be available to the stronger lines, pursuant to the general purposes of section 210.

"(3) If the financially strong railroads cannot obtain funds from the general investing public without paying an excessive rate of interest or submitting to some other undly burdensome condition or taking a risk in respect of their financial structures not justifiable in the exercise of a sound business and financial discretion, it would be clear that such railroads are unable to provide themselves with the funds necessary from other sources, and in such cases, we would be justified, upon a proper showing by the applicant, in making the finding required by the concluding clause of paragraph (b) of section 210 of the transportation act, 1920, as amended—namely, 'that the applicant, in the opinion of the commission, is unable to provide itself with the funds necessary for the aforesaid purposes from other sources.'

"It was undoubtedly the legislative intent that the railroads should be enabled, through loans made under section 210 of the transportation act, 1920, as amended, expeditiously to move the commerce of the country, to meet maturing capital obligations and otherwise properly to serve the public during the transition period of two years immediately following the termination of federal control.

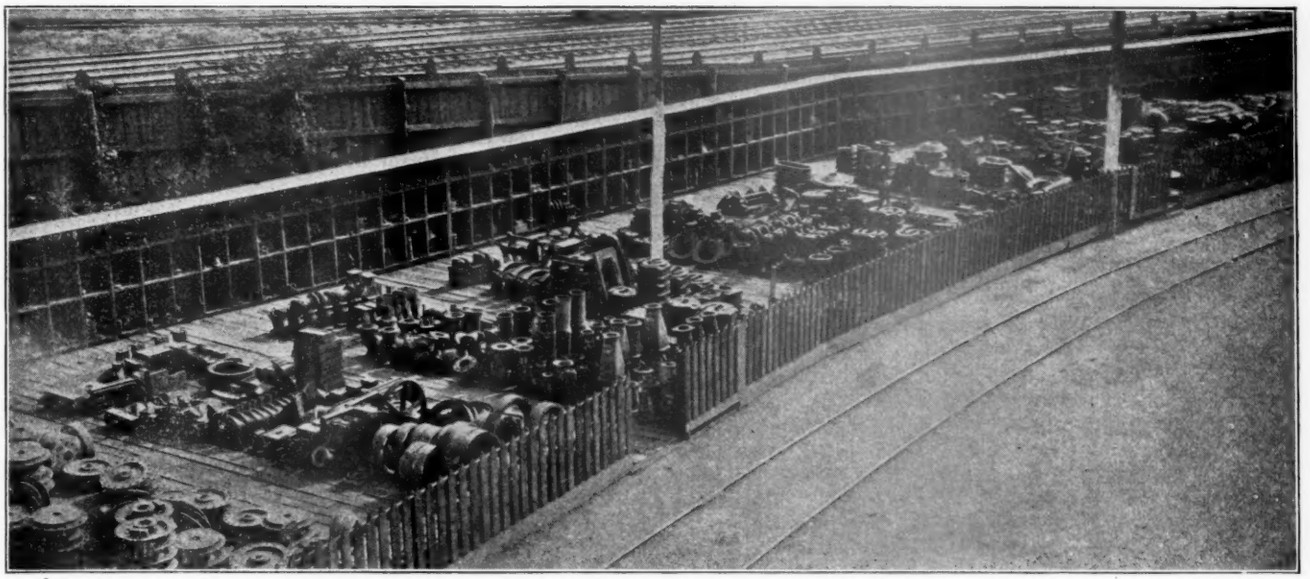
"The majority of the railroads would not be unable to obtain funds on some terms, provided they agreed to burden themselves and their patrons for a term of years with unusual and excessive rates of interest. The rate of interest which an individual railroad may be required to pay is the market for a railroad of its class.

"Under a literal interpretation of the concluding clause of paragraph (b) of section 210 of the transportation act, 1920, as amended, the majority of railroads would be unable to qualify for loans. The remainder of the railroads, while able to make the showing that they are unable to obtain funds from other sources, generally cannot make the further showing required by the statute that 'the prospective earning power and the character of the security offered are such as to furnish reasonable assurance of the applicant's ability to repay the loan within the time fixed therefor and to meet its other obligations in connection with such loan.' Under these conditions it would be practically impossible to make any loans, and section 210 of the transportation act, 1920, as amended, would be reduced to a nullity.

"In order to give force and effect to the statute, the inability to obtain funds from other sources must be construed as an inability to secure funds upon terms which the carrier with due regard for the public interest would be justified in accepting, and it must be held that an excessive rate of interest or other unduly burdensome or injurious conditions which the exercise of sound business discretion will not permit constitute inability, within the meaning of the statute, to obtain funds from other sources.

"We find that inability to obtain funds from other sources contemplated by the concluding clause of paragraph (b) of section 210 of the transportation act, 1920, as amended, is not an absolute inability, but a practical inability or inability within the exercise of sound business discretion in the public interest to be determined by the consideration of the facts of each particular case. Complete and concrete statements of such facts should be furnished by applicants showing their efforts to obtain the necessary funds from other sources and the result of such efforts and if they have already employed their credit, how a further recourse thereto would affect them."

PLUMB PLAN DEAD.—The Plumb plan of government ownership of railroads is dead—deader than a door nail. It was killed by the very men whose leaders tried to put it over. Their policies resulted in such a degree of inefficiency that railroads were a losing proposition. The government has not yet squared accounts with their owners.—*Williamsport (Pa.) Grit.*



Material Storage Facilities on the Western Maryland

The Organization of a Strong Service of Supply

Development of the Purchasing and Stores Departments as a Unit on the Western Maryland

THE VALUE of a purchasing department depends largely on the perfection of its organization. Years ago the purchase of railway materials was regarded as a minor function and was entrusted to an official usually burdened with more pressing duties. He was expected to exercise reasonably good business judgment and, above all, to make sure that the supplies furnished were ample to meet any emergency. What such a policy would result in if pursued by the railroads at the present time can only be imagined.

The growth and value of railway purchases has been stupendous. Recent valuation studies reveal the fact that in 1870 a railway coach cost about $5,000. Today a railway coach costs nearly eight times that amount. The railroads have long been recognized as the largest consumers of material; they now use over 1,200 complete units of material and nearly 50,000 different working parts or accessories. Any of this material to have an earning power must be purchased to best fit the purpose for which it is acquired.

The necessity for definite policies with respect to the purchase of supplies and for system in handling material soon became apparent in the development of modern railroading, but the growth of an organization capable of supervising all the minute details involved in the task of supplying the railroads, while at the same time shaping and executing a judicious policy with respect to the purchase of material, has been very slow. Those who have realized what could be saved to the railroads by systematizing the handling of supplies, establishing a safe policy toward the accumulation of material stocks and exercising trained judgment in the conduct of purchases, have often found it difficult to impress the value of these ideas on the management of a railroad. It has been stated that the responsibility for the purchase and distribution of materials was originally placed in the hands of departments without particular reference to the qualifications of the department for this important function. It was characteristic that these departments should resist a transfer of these functions to another department particularly where it was anticipated that this step might restrict the availability of supplies.

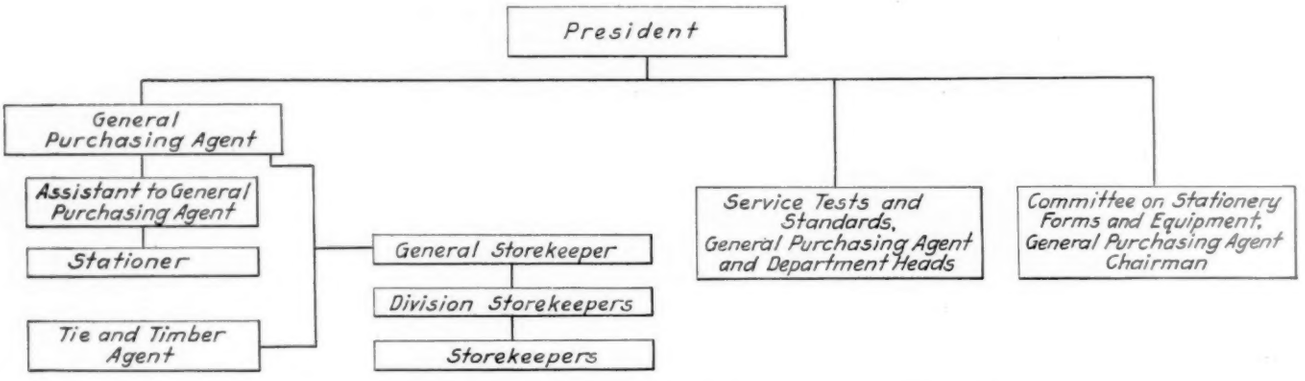
It has required persistent effort to establish the present standing of the supply department. The economies that have been realized in the purchase of railway supplies and the improvement that has been effected in the distribution of materials may broadly be credited to the better organization of these activities. What remains to be accomplished toward reducing the aggregate cost of supplies and the efficiency of their distribution will probably be effected through perfecting a strong unit organization embodying both the purchase and ultimate distribution of material. Such a unit may properly be defined as the "service of supply". What such an organization constitutes, what its duties are, its methods and its policies, have been quite clearly defined by M. E. Towner, general purchasing agent of the Western Maryland as a result of his work in establishing an effective service of supply on that railroad.

Western Maryland Unit Organization

The outstanding feature of the organization plan as it has been worked out on the Western Maryland is that the entire responsibility for the purchase and distribution of materials rests with one department and that this department is on a parity with the operating, the mechanical and other major departments of the railroad in its respective relation to the chief executive officer. This is a radical departure from the plan of organization relating to the purchase and distribution of supplies on many railroads, but it must be admitted that there can be no division of responsibility with this form of organization. There can be no question as to who is responsible for the delivery of materials in accordance with the requisitions from the mechanical and other departments, or who is responsible for maintaining the lowest investment in materials consistent with safety. It is pertinent to state in this connection that during the days of the Railroad Administration a very small proportion of the delays to equipment undergoing repairs

reported as due to shortage of material came from railroads on which the purchase and distribution of supplies was in the hands of a strong unit organization.

As will be noted on the accompanying organization chart, the general storekeeper reports directly to the general purchasing agent who, as the responsible chief of the service of supply, reports directly to the president of the railroad. Division storekeepers in turn report to the general storekeeper and the local storekeepers report to their respective



Organization of the Service of Supply on the Western Maryland

division storekeepers, as is the usual custom. The relation of the tie and timber agent to the general purchasing agent does not differ from the usual practice. The stationer, it will be observed, reports directly to the assistant to the purchasing agent.

The general purchasing agent is chairman of the Committee on Stationery Forms and Equipment whose recommendations are made direct to the president. This is apparently an admirable arrangement but one which would hardly be practical on a larger railroad. Likewise the plan relating to service tests and standards as shown in the accompanying diagram assures this subject the prestige it deserves but would evidently have to be modified if applied in principle to a larger system.

Analysis of Individual Duties

On the Western Maryland the purchasing force is designated as the Service of Supply-Purchasing Section and the stores force as the Service of Supply-Stores Section. Each position in this service, from the purchasing agent down, is classified by title and the work of each position is designated under the caption "Tour of Duties," enabling each one to familiarize himself with the accomplishments to be effected. Sufficient elasticity is allowed to inculcate individual ambition and effort, resulting in promotion on the basis of merit. This analysis of individual duties has resulted in the elimination of overlapping and of useless positions on the Western Maryland to the extent of approximately 7½ per cent of the total payroll of this department.

The "Tour of Duties" for each of the individual officers as shown on the organization diagram together with an abstract of the Tour of Duties assigned to some of the more important subordinate positions is as follows:

Purchasing Section

Duties of the General Purchasing Agent

Attends to all contract matters.
Deals with all new equipment or A. F. E. purchase matters.
Supervises all trial propositions or tests.
Supervises the check maintained on the service rendered by various materials.
Deals with changes or substitution of materials.
Arranges specifications in conjunction with various departments.
Approves all requisitions or emergency purchases.
Exercises jurisdiction over the payrolls, involving changes or additions.
Directs inspection service arrangements.
Addresses urgers to the general storekeeper anticipating the purchase of materials.
Keeps department heads notified of general market conditions, prices and shipping possibilities.
Studies price and general market conditions as noted in trade journals.
Receives representatives of supply firms.

Duties of the General Storekeeper

Attends to such local work as necessary to keep in touch with department heads in connection with their material requirements.
Maintains check on entire stock to expedite work and properly systematize same.
Supervises work of stores department and the tie and timber agent.
Purchases fuel.

Duties of the Tie and Timber Agent

Attends to all details relating to the purchase of cross-ties and lumber.
Maintains a list of all producers on the railroad, a current survey of the railroad's productive sources and annual production possibilities; also of the available timber that might be cut into cross-ties.
Supervises the tie and timber inspection force.
Checks up the lumber requirements and arranges for inspection at mill or destination.
Arranges such prices and contracts as are necessary to stimulate production.
Enforces standard specifications and grading rules.
Arranges for the proper use of the tie check to insure against improper use.
Directs the piling and handling of lumber by the general storekeeper.
Exercises jurisdiction where economies can be worked out, particularly in connection with keeping down special kinds or sizes.
Co-operates with roadmasters and supervisors in connection with cross-tie production and prospective sources of supply.
Co-operates with the chief engineer relative to the proper distribution of cross-ties.
Reports on the use of treated ties.
Advises relative to the development of timber holdings owned by the railroad, including the sale of merchantable lumber.

Duties of Assistant to General Purchasing Agent

Attends to material delivery, follow-up system, including urgers for material on order.
Handles correspondence and matters pertaining to payment of accounts overdue.
Establishes facts relative to the delivery of material that may be claimed short by the stores section.
Attends to the daily distribution of bills rendered.
Makes up monthly statement of purchases as charged to classifications, showing outstanding obligations.
Directs fuel oil, car wheel, oxygen and prest-o-lite deliveries.
Approves bills and vouchers.

Supervises operation of office in absence of general purchasing agent.
Attends to special matters as designated by the general purchasing agent.

DUTIES OF THE STATIONER

Directs the purchase of stationery.
Supervises the standardization of stationery forms and office devices, also proposed changes to standard forms.
Maintains a check of the stationery stock record and quantity records, also typewriter record, etc.
Checks all bid requests before these are sent out.

DUTIES OF THE ORDER CLERK

Writes orders from approved requisitions (*orders average 600 monthly*).
Writes all orders from daily emergency requests.
Writes all bid requests applying on regular requisitions.
Checks back all orders when written and checks requisitions to see that no orders are placed without price.
Tabulates all inquiry figures.

DUTIES OF INVOICE CLERK

Checks back all bills received with regular orders to note the quantities, f. o. b. points, terms and prices.
Checks up the statements of accounts.
Keeps an alphabetical record of bills rendered.
Lists bills daily to general storekeeper.
Checks the return of bills from general storekeeper (based on vouchers received).
Reports balances overdue on orders or old orders.
Files daily all requisitions and copies of orders.

DUTIES OF PRICE BOOK CLERK

Receives and enters all bills in price book record. The price book shows a record as to the date of order, order number, f. o. b. terms, destination of material, supply firm, price, quantity billed, classification, number and date of bill. (This record is checked to catch duplicate billing.)
Checks list prices against catalogue lists. (This applies particularly to general lists, repair part lists or contracts.)
Endorses requisitions with the prices previously paid when necessary.
Reports increase in quantity on any commodity ordered.
Maintains a comparative record of the total quantity, average price and total value of items used. (Listed alphabetically so as to cover five years upon a comparative basis.)

DUTIES OF CHIEF CLERK

Receives all incoming mail and marks requisitions.
Attends to all correspondence relative to orders, giving special attention to specifications, changes on orders, prices, cancellation of orders and telephone requests for emergency orders.
Follows up material on test, material standardization and the list of standards.
Supervises material routing. (This work is especially important on account of freight terms, embargo situations, etc.).
Supervises wheel records and replacements.
Checks monthly price sheet of commodities used on maintenance of way estimates.
Maintains headlight installation records.
Keeps a comparative cost record of emergency purchases.
Supervises general office work and payrolls.

The duties of the purchasing section, it is also noted, include the execution of a daily record of emergency purchases in dollars and cents. Strict attention is paid to the elimination of purchases of this character as it is believed that one of the causes for emergency purchases is the failure to advise this department of proposed outlays sufficiently in advance. Careful attention is given to the stock of materials that should be carried, its proper maintenance and the quantity necessary to order with full consideration of the length of time required for delivery. Material covered by contract usually can be well anticipated, avoiding fill-in or emergency purchases at higher prices, or the substitution of other materials, the stores section being furnished by the purchasing department with a synopsis of such arrangements to assist them in ordering on requisition, not only for stock but before expiration of contract in sufficient time to take advantage of price before expiration of agreement. This information is considered of value whatever market conditions.

(The concluding portion of this article dealing with the duties of the Stores Section and the policies pursued by the Purchasing Section will appear in a subsequent issue of the *Railway Age*.—EDITOR.)

Advantages of Steam and Electric Locomotives

A. W. GIBBS, chief mechanical engineer of the Pennsylvania system, was one of the speakers at the joint meeting of the American Society of Mechanical Engineers and the American Institute of Electrical Engineers held in New York on October 22 and reported in the *Railway Age* for October 29, page 739. The discussion of the paper prepared by Mr. Gibbs was not available when the first account of the meeting was published and an abstract is therefore presented below.

Discussion by A. W. Gibbs

After reading the papers on steam versus electric operation of railroads, I cannot but feel that both Messrs. Muhlfeld and Armstrong have been a bit too enthusiastic. Both methods of operating have their advantages and both have decided limitations.

In Mr. Armstrong's case his data is largely derived from mountain electrification, where the electric locomotive is undoubtedly at its best and the steam at its worst, and he has compared with it a type of steam locomotive whose coal and water rate is more than double that of locomotives which are especially designed for such service. Then on this mountain performance he reasons from the particular to the general application of electric operation. True, he puts in a disclaimer as to the particular steam locomotives referred to representing the best modern practice, which brings up the question—Why cite them at all?

It is not at all certain that the speed advantage claimed is by any means true where the steam locomotive is designed for the work.

Mr. Armstrong gives a comparative statement of the performance of two steam and one electric locomotive to which exception can be taken because the steam locomotives do not represent the last word as to those available, and the electric locomotive is on paper.

The table shown herewith gives data for a 2-10-0 type steam locomotive of which over 100 are in regular service and of which fortunately very full information is available from the locomotive testing plant. These locomotives were expressly designed to do all of their work within the economical range of steam distribution, the required power being obtained by increases in size of cylinders and steam pressure. While I have given the power at nearly the speed mentioned by Mr. Armstrong, the performance is excellent at double the speeds given, but the sacrifice in drawbar pull—from nearly 60,000 pounds at 14.7 miles per hour to about 43,000 pounds

2-10-0 Type Steam Locomotive	
Weight in working order	371,000 lb.
Weight on drivers	342,050 lb.
Weight on engine and tender	523,000 lb.
Drawbar effort at 14.7 miles per hour, 45 per cent cut-off	58,900 lb.
Gross tons (2 per cent grade)	1,280 lb.
Trailing tons	1,019
Coal per D. H. P. at this speed and cut off	2.8 lb.
Tractive Effort at 22 miles per hour, 40 per cent cut-off	42,500 lb.
Gross tons	923
Trailing tons	662
Coal per D. H. P.	3.2 lb.
Tractive effort at 25.4 miles per hour, 45 per cent cut-off	43,600 lb.
Gross tons	948
Trailing tons	687
Coal per D. H. P.	3.8 lb.

at 25.3 m.p.h.—would not be justified. The figures given are within the range where stoker firing is as economical as expert hand firing, with the additional advantage that the stoker does not get tired.

This is a special design in which the advantage is that it cannot be worked at uneconomical points of cut-off. At speeds and pulls where the usual design is also worked at an economical range its performance is about the same.

The Mallet performance given in Mr. Armstrong's paper is evidently that of one of the large compound locomotives. In all of these locomotives there is a tendency to choke up with increases of speed, due to increase of back pressure.

The same arrangement of limited maximum cut-off used in the 2-10-0 locomotive already described has been embodied in a simple Mallet now running. In brief, the improvements in the steam locomotive, if properly availed of, have much narrowed the field of economical electrification.

Stand-by Losses. While these losses are actual and large it is very difficult to fix their value, as they are so much affected by the use made of the locomotive. Where the average monthly mileage is low the stand-by loss is presumably high, and it is a part of good operation to bring up the average mileage as high as possible. When all is said the electric locomotive has still an advantage with respect to stand-by losses, provided there are sufficient trains in motion to smooth out the total demand on the power plant, which is assumed to be steam operated.

Weather. The independence of the electric locomotive of severe weather is another undoubted advantage, not so much because of the performance of the motors but rather from the avoidance of losses and delays due to ash-pit work and to frozen pipes and other parts, incidental to the presence of water on the steam locomotive.

Liability to Interruption. Electric operation is dependent on uninterrupted connection with the source of power. In the event of breakage of the line, especially of the overhead construction, the trains in the section involved are dead and cannot get themselves out of the way of the repair trains. On large systems it is customary to make great changes in the assignment of locomotives to clear up congestion at any point on the system; also, to avail of diversion routes on which steam trains may be moved around obstructions on the main line. The fact that the steam locomotive is a self-contained power plant is an immense advantage in this respect. In electric operation there is not this freedom of movement.

Speeds. The question of speed is evidently treated from the freight standpoint, for there has never been any question as to the speed capacity of well designed passenger locomotives, being far beyond that permitted by the rules. As I see it, the feature of high speed of trains is of less importance than uniformity of speeds of different trains. If tonnage trains had the same speed as preference trains, and could thus avoid the great delay due to side tracking of trains of inferior rights, far more would be accomplished than the mere saving in time over the division due to the increased speed.

Extent of Electrification. Where electrification is contemplated a very serious question is: What shall be its extent? Naturally the desire would be to wipe out as many as possible of the extensive accessories to steam operation. If, however, it becomes necessary to operate steam trains over the electrified section, it will obviously be necessary to retain water stations and possibly fuel stations, provided the electrified section is sufficiently long. This operation of steam locomotives under their own power over electrified sections would be necessary in case of redistribution and possibly in case of diversions where the electrified section formed part of the diverted line. Therefore, the claim for economy in doing away with these features of steam operation would probably not be realized.

Mr. Muhlfeld's Paper. Mr. Muhlfeld ignores the fact that the modern improvements which have so added to the performance of the steam locomotives are potential only. For instance, it is very possible and common by indifference to so carry water in the boiler that the superheater becomes merely a steam dryer and its value disappears. In many cases because of neglect of damper mechanism or from dirty flues little benefit is derived from improved appliances. Modernizing of steam locomotives calls for intelligent use of the devices, which will come when the old spirit of loyalty returns.

Conclusions. The electric locomotive or electric operation has in many cases undoubted operating advantages because the power is generated in quantity at few sources and the power on any one train is not limited by the capacity of a self-contained portable power plant; sustained speeds are possible—due to independence of fuel and water stations and, as a result of both these conditions, better use can be made of a given stretch of road.

Electrification does not at all obviate the numerous class of delays due to the train itself, such as hot boxes or other of the numerous derangements which when combined so much retard the movement over the road. Electrification does not obviate that class of delay arising from necessary classification on line of the road to meet terminal requirements. Where the terminal conditions limit the capacity of the road as a whole electrification is not the remedy.

The relative cost of repairs of both classes of equipment cannot be fairly stated at the present time because maintenance conditions are so abnormal and because the most modern locomotives of both classes are too new to have reached a stable condition, this being especially true of the electric one. While the indications are that the maintenance of the electric locomotive will be less than that of the steam, it must be remembered that the electric locomotives are dead affairs without the necessary electric generating, transmitting, converting and track appliances, all of which are an added expense, due solely to electrification; hence the cost of maintenance of all of these, in addition to that of all of the locomotives, divided by the locomotive mileage, is the real treasury cost of maintenance per locomotive mile.

It is to be noted that practically all of the electrification on steam railroads so far have been based on local conditions. In the electrifications in and around cities a moving cause has been the elimination of smoke and other objectionable features incidental to steam operation, and the possibility of increasing the capacities of the passenger terminals. On the Milwaukee road it was the utilization of available water power. On the Norfolk & Western it was to secure increase in capacity on a congested mountain division with tunnel complications. It is fair to assume that other electrifications will be similarly governed by local conditions.

If, after careful consideration of the road, based on actual train sheets for the heaviest actual or probable congested operation; the capacity and number of active and available locomotives required; crediting the operation with incidental savings which may be effected, and eliminating expenses peculiar to steam operation; it appears that there would be economy in electrification, either from actual savings or better operations, or both, it still remains for the management to decide whether the money required can be spent to better advantage for electrification than for some other features of the general operation.

RAILROADS GET A BIG REVENUE from the automobile industry, according to an estimate made by the National Automobile Chamber of Commerce. It is calculated that freight bills on the finished product alone exceed $100,000,000 annually; that 500,000 freight cars are needed in a year to carry automobiles, trucks and finished parts; and that 570,730 machines have been delivered over highways in the last 21 months—business for an additional 170,000 cars, if the cars could have been found.

Some Present Day Problems of the Railway Rail*

The Question of Deferred Renewals Is No More Important Than That of Failures in Service

By C. W. Gennet, Jr.
Manager Rail Inspection, Robert W. Hunt & Co., Chicago

SOME TIME AGO I estimated that there was a shortage of 10,000,000 tons of rails in the United States as of January 1, 1917. This figure was reached by taking account of the annual consumption of rails for 24 years and the increased mileage of the roads reporting to the Interstate Commerce Commission for the same period. The shortage mentioned could be defined as the amount of rail of 85-lb. section necessary to put the roads in a prime physical condition typical of good practice necessary for handling the heavy equipment and traffic desired. No particular reason has developed for modifying the calculated shortage of 10,000,000 tons then existing, but the three years of government control requires that an addition of probably 2,000,000 tons be made to it, so that 12,000,000 tons really represents the actual shortage to-day.

Deficiency in Renewals

For six years prior to 1914 the total consumption—meaning production plus imports and minus exports—of all rails in the United States was 16,085,000 tons, or an average per year of 2,680,000 tons. For the six years 1914 to 1919 inclusive the total consumption was 12,124,000 tons, or an average of 2,020,000 tons. Thus, the total deficiency in consumption for six years is approximately 4,000,000 tons, to which must be added probably 1,000,000 tons more for the year now ending. In other words, 5,000,000 tons of rail should be provided at once to balance the rate of consumption that existed for six years prior to the war, and, needless to say, this figure takes no account of the tremendously increased volume of traffic which has worn out rails with great rapidity in the last few years.

Calculations, therefore, indicate that as an emergency measure 5,000,000 tons should be furnished the roads immediately, while in addition there is an apparent shortage of 7,000,000 tons more necessary to put the roads in the proper physical condition. These tonnages, representing deficiencies, must be supplied over and above the normal consumption which for a considerable period prior to the war averaged about 2,800,000 tons annually. A very conservative estimate then shows, after making allowance for rates of renewal which cannot be calculated accurately, and allowing 500,000 tons per year for export purposes, that the country's rail mills should be called on to produce at least 4,500,000 tons of rails per year for the next five years to insure a return to normalcy.

For many years, up to say 1906, the country's production of steel ingots and rails increased proportionately, rails then being regarded as one of the principal, if not the chief, tonnage factors of ingot production. As high as 30 per cent of the total ingot supply had been rolled into rails, and in 1906, the banner year of rail production, when 3,977,000 tons were rolled, about 18 per cent of all the ingots produced were made into rails. Ingot production has increased steadily and rapidly, and in 1917, it was practically double that of 1906. But rail production has declined almost as steadily and rapidly, and in 1917 when all ingot production records were broken the tonnage of rails rolled amounted to only 6½ per cent of the tonnage of ingots cast. The demand for miscellaneous products and the lessened demand for rails have resulted in some cases in forcing rails into the background to such an extent that it is doubtful that the rail mills of the country today have the actual capacity that they had 15 years ago.

It is very difficult to estimate the country's capacity for producing rails today. Probably with sufficient insistence the 1906 record of nearly 4,000,000 tons could be reached but, as pointed out, this could only be done by decreasing production of some other products not now easily contemplated. A conservative estimate of the country's ability to furnish rails without serious interference with other business gives 3,500,000 tons as the possible annual yield, and this is 1,000,000 tons short of what ought to be supplied annually for the next five years.

Defects a Live Subject

Rail defects serve to foster seemingly continuous discussion aiming toward their avoidance. Defects are mentioned especially, because it certainly does not appear at the present time that the wear of open hearth rails is open to serious complaint.

Ordinary figures for failures are not particularly impressive except to the technician. But interpreting published records in a certain way indicates that for open hearth steel one rail out of every 800 laid may be expected to fail and have to be replaced in the first five years of service. Although such figures may seem appalling, solace is found in the fact that only about half of the total failures are what may be termed of a dangerous type. The others consist mostly of defects occurring in the head of rails, which as a rule can be detected easily by careful surveillance and removed prior to the development of further trouble. Notwithstanding what the types of failures may be, or how prolific they may be, questions of specifications and manufacture are important and deserving of the fullest thought.

There is little use in threshing over the subject of specifications, except in a very general way. My criticism of most rail specifications is that they are too broad in certain features and too narrow in certain others, with the result that both manufacturers and consumers suffer aggravating incidents that could easily be prevented. Manufacturers frequently find it difficult to get good steel accepted quickly, and on the contrary, railroads are frequently bound to accept what unquestionably ought to be rejected outright.

Cold Straightening

Specifications lack breadth in the customary clause governing straightening. No doubt specifications used in 1844 read the same as they do now; namely, that "rails *must* be straight in line and surface." The result of this requirement is that rails may be strained beyond their elastic limit in 20 or more places by repeated blows in the cold straightening press, only then to be shipped to a five or six degree curve and spiked readily into place. Modern section rails are exceedingly flexible and providing they contain no short bends or sharp kinks, it would seem practicable to accept them within certain limits perhaps, without the damaging cold straightening now given to each and every rail. Experimental lots

*Abstract of a paper and the discussion following as presented before the Western Society of Engineers, Chicago, on November 18, 1920.

of such rails have given fair service and the subject deserves more attention.

The physical tests do not, as a rule, go far enough to protect against bad or unsound rails being accepted and laid in the tracks, only to be replaced perhaps after a short service. Testing two or three pieces of rails to represent as many as 200 made from perhaps 50 ingots, each possessing marked individuality, even though from the same heat, is incompatible with the tests prescribed for many other products on whose use hinges no important question of life. The proposed abandonment of the drop test, for years recognized as a standard test for brittleness, and the plan of covering this feature by resort to a measurement for ductility obtained under difficult and uncertain conditions, is regrettable. Granting the importance of ductility for rail steel, the imposition of arbitrarily determined limits for it, the matter of measuring it satisfactorily except in the laboratory, and finally the question of accepting or rejecting rails whose ductility varies by a hundredth part of an inch, is to my way of thinking positively dangerous. Would it not be better to waive the question of the ductility of rails entirely, as it was so long an unknown thing, and to devote more study to the definition of "interior defects" and such positive methods for detecting them as would permit of rejecting those rails whose test piece fractures show unmistakable signs of segregation?

Pertinent Questions as to Manufacture

I regard the manufacture and rolling of rail steel as of more importance than that of any other steel product, and conditions emphasize the necessity of making thorough studies of the various features of present day methods. Such studies must frequently be based not only on the manufacture itself but on the story that the rails in service may tell later. Records for many subjects are already in hand and time and work are merely required to afford definite information on questions of great value to both railroads and manufacturers. Literature is very weak on many of the subjects that ought to be investigated and discussed. And among the many questions that can be raised I suggest some of the following pertinent of modern practice and especially appropriate, therefore, for original research and study.

1. Are rails made of steel by the continuous Talbot furnace process comparable with those made by the straight open hearth method? In the continuous process the furnace is seldom emptied but 100 tons or so of steel is tapped every 2 hours, as against the 10 hours of time required to make an equivalent heat in a regular furnace. Is the steel from the rapid working Talbot furnace sufficiently free from oxides and other impurities to afford good, sound rails, and how can such a question be proven quickly?

2. What effect, if any, on rails has steel made by the duplex process, wherein highly oxidized metal is added to the open hearth furnace, sometimes very soon before tapping? How can rails rolled from steel containing excessive amounts of impurities be detected?

3. What effect on rails is produced by recarbonizing the steel in the ladle with coal or coke and then adding cold deoxidizers to the ladle? What is the real effect produced by holding a ladle of steel prior to casting the ingots to permit of time for the chemical reactions to settle.

4. What is the effect on rails rolled from ingots cast with running stoppers and sometimes without any control by the ladle operator? How does the size of the nozzle, pouring temperatures, and time required to cast the ingots of a heat influence rails?

5. How soon after casting ingots should they be charged into the soaking pits in order to assure a minimum of piping and segregation? What effects are produced by delays in charging the ingots to the pits promptly, and what is the effect of chilling the outside of the ingots unduly and rapidly?

6. How long a time and under what conditions of gas and air regulation should ingots remain in the soaking pits? What kind of control of the pits is best to insure against overheating or burning the ingots? What is the effect of rolling rails from ingots one side of which has been heated so hot as to show a bright white spot significant of overheating?

7. What effect on rails has different rates of blooming the ingots? In some cases 8 in. by 8 in. blooms are made from ingots in 9 passes and in other cases in 20 passes. Some mills work rapidly and others slowly; does this produce any difference?

8. What effect on the grain structure or the life of rails is produced by increasing the number of passes, or work given to the steel, when the ingots are rolled into rails? One mill makes a rail from a 19-in. square ingot in 15 passes, while another mill makes the same rail from a 24-in. square ingot in 29 passes. Has the average rate of reduction per pass any effect on the life of rails?

9. What matters mostly influence the production of rails showing seams on the surface? Some heats are practically free from indications of seams, while on other heats rolled at the same time seams are abundant.

Discussion

The discussion of this paper was concerned largely with that portion of it devoted to rail failures. It was conceded that the nine questions propounded by Mr. Gennet were of vital importance but no one felt qualified to answer them. H. M. Wickhorse, rail expert for the American Railway Engineering Association, discussed the record of rail failures, calling attention to the fact that failures in rails in a service period of five years have been reduced since the records were kept by the American Railway Engineering Association from a total of 400 failures per 100 miles of track to 74 failures for the rails rolled in 1914. Studies of records for subsequent rollings indicate that less favorable results are being obtained for rails rolled during the war period when, according to Mr. Wickhorst, there was some breaking down in the morale of the mill forces. This tendency, however, did not deter Mr. Wickhorst from the feeling that much better records on rail failures could be obtained in the future.

In reply Mr. Gennet expressed the opinion that inadequate track maintenance also had much to do with the unfavorable rail failure records of recent years. He also pointed to the importance of seemingly minor influences in mill practice and pointed to the prevalence of transverse fissures in rails, coming from heats produced at certain times when some peculiar or intangible mill conditions seemed propitious for the development of these serious defects. Captain Robert W. Hunt, president of Robert W. Hunt & Co., reviewed the essential requirements for reduced rail failures, including a clean ingot and careful treatment of the ingot from the time it is cast until the rolling has been completed. He also advocated the abolishment of cold straightening and advocated the milling of rail ends and the use of canted tie plates. He emphasized the importance of the element suggested by Mr. Gennet, namely, the possible influence of some seemingly unimportant circumstances of mill practice. Touching on the increase in rail failures for rails rolled during the war period, he was inclined to ascribe this to defective maintenance and also to the fact that the technical organizations of the manufacturers were compelled to divert their energies very largely from rails to the problems of war materials.

THE CANADIAN GOVERNMENT had been criticized for building in advance of requirements, but such building has hastened the development of the country.—*Hon. J. D. Reid, Canadian Minister of Railways.*

The Year's Activities of the A. R. A.

Reports of the Executive Committee and Division General Committees at the Annual Meeting

At the meeting of the American Railway Association, held at the Blackstone Hotel, Chicago, November 17, the work undertaken by the association during the past year was outlined to the members in the reports of the Executive Committee and the General Committees of the various divisions, as outlined briefly in the issue of last week. Reports on the more important matters settled or still under consideration are abstracted below:

Executive Committee Report

The Executive Committee in its report submitted a statement regarding the important subjects which have been given attention since the November, 1919, session of the Association.

Per Diem Rate

By action of the Association of Railway Executives the per diem rate was fixed at 90 cents per car per day, effective March 1, 1920. This rate was based on data obtained by the Transportation Division of the American Railway Association.

Early in August of this year the Advisory Committee of the Association of Railway Executives requested the Executive Committee to give immediate consideration to several subjects, among which was the per diem rate, particularly as to what would be an adequate per diem rate to meet present conditions, such rate, if approved, to take effect as of September 1, 1920.

The Executive Committee thereupon requested the General Committee of the Transportation division to give immediate consideration to this subject. The General Committee of that division recommended that the rate be made $1.00 per car per day, effective September 1, 1920. The Executive Committee on reviewing the report decided to recommend to the Advisory Committee that the rate be made $1.10 per car per day. This action was approved by the Advisory Committee and the Association of Railway Executives, and the general secretary was directed to take a letter ballot, the increased rate to take effect September 1, 1920, if approved by a majority of the members of the Association, that membership to represent two-thirds of the cars owned or controlled. The proposition did not receive such approval, railroads representing 60 per cent of the freight cars voting in the affirmative, 39 per cent in the negative, and one per cent not casting ballots. At the request of the Advisory Committee the Executive Committee thereupon convened and again considered the per diem rate, based on a further review of the computation of the various factors by the General Committee of the Transportation division. In accordance with the recommendation of the General Committee the Executive Committee, pending the receipt of further data, decided to recommend that the rate be made $1.00 per car per day, effective November 1, 1920, which has in turn been approved by the Association of Railway Executives and has been submitted to the members for a vote by letter ballot; due announcement of the result of the ballot will be made on November 23, 1920.

At the request of the Advisory Committee the General Committee, of the Transportation division, is also considering the subject of graduated per diem rates to apply to cars of various capacities. It is obtaining figures covering the cost of owning and maintaining freight cars for the first eight months of the current year and will submit a further report on the subject at a later date.

Cancellation of Per Diem Reclaims and Per Diem Discrepancy Claims During Guaranty Period

Subject to securing approval of the Interstate Commerce Commission, the Executive Committee has approved the recommendation of the Transportation division that per diem reclaims and per diem discrepancy claims between railroads working under government guarantee during the guaranty period, February 29 to August 31, 1920, be cancelled. The Commission now has this subject under advisement.

Department of Demurrage Supervision

Recommendation was received by the Executive Committee from the General Committee of the Transportation division for the establishment of a Department of Demurrage Supervision to insure uniform application and enforcement of demurrage and storage rules on all railroads.

The Executive Committee has approved this plan which recognizes that primarily each railroad must assume responsibility for the proper enforcement of its tariffs, the supervising agency merely undertaking to see that the rules are uniformly applied. The plan does not contemplate the organization of an accounting bureau which would relieve the individual railroads of their responsibility. A manager and six district supervisors will be maintained whose duties it shall be to secure uniform enforcement of the tariffs in cooperation with the demurrage officers of the individual railroads. The expense of this department is to be borne by the railroads at interest.

The plan has been submitted to the executive officer of each of the railroads in the Official Classification territory, and approval thereof has been received from a large majority.

The manager and his immediate force formerly employed by the Eastern Freight Inspection Bureau to take care of this work, have been temporarily continued and will be used as the nucleus for the Department of Demurrage Supervision.

Campaign for Conservation of Fuel

The Executive Committee has authorized the president to arrange for the establishment of a Joint Committee on Fuel Conservation to consist of representatives of the Operating, Mechanical, and Purchases and Stores divisions.

The work of organizing this committee is now progressing, further report of which will be made to the members by circular. It is expected that an active campaign for the conservation of fuel will be inaugurated at an early date.

Mechanical Inspection Department

Request was received by the Executive Committee from the Eastern Presidents' Conference that the American Railway Association again take up and investigate the matter of making and rendering bills for repairs to freight cars, with a view of correcting any wrongful practices that may exist in this connection.

The Executive Committee has authorized the establishment of such department within the Mechanical division, following the plan recommended by the General Committee of that division.

Prevention of Freight Claims

The Executive Committee has given consideration to recommendations of the General Committee, of the Freight Claim division, for the establishment of a campaign for the

prevention of freight claims, and in that connection has appropriated a sum not to exceed $20,000 per annum, for the employment of competent assistants to work in co-operation with and under the direction of the Committee on Cause and Prevention of the Freight Claim division.

Creation of Committee on Relations of Railway Operation to Legislation

With the provision that such action does not conflict with any action which may be taken by the Association of Railway Executives, the Executive Committee has directed the president to appoint a Committee on Relations of Railway Operation to Legislation and properly establish the same.

The committee when appointed will work in close accord with Col. A. P. Thom and the Legal Committee of the Association of Railway Executives in charge of legislation at Washington, both federal and state. The work of the Committee will be generally along the lines adopted by the constituent railroads in May, 1910. The president will consult Col. Thom and the Legal Committee of the Association of Railway Executives and ascertain their views as to the establishment of the Committee before further action is taken.

Interchange Agreements

The Executive Committee has recently received a recommendation from the General Committee of the Mechanical division that a formal agreement be executed covering the Passenger Car Rules of Interchange. This recommendation has been approved and a formal agreement blank will be submitted to the members for execution.

Water Containers

Request has been received from the acting surgeon-general of the Bureau of Public Health Service, Treasury Department, that an order be issued fixing July 1, 1922, as the date when all water containers in cars and stations should be so constructed that ice does not come in contact with the water. The Executive Committee has referred this subject to the Medical and Surgical section.

Amalgamation of Other Organizations

Applications have been received from several volunteer railroad organizations to become amalgamated with the American Railway Association. The Executive Committee having given careful consideration to such amalgamation has authorized the president to arrange to admit as sections of the association under such conditions as he may deem advisable the following:

American Association of Local Freight Agents.
Association of Railway Electrical Engineers.
Association of Railway Chief Surgeons.
American Railway Surgeons Association.
New York and New England Surgeons Association.
Railway Section of the Southern Medical Association.
American Railway Chief Special Agents and Chiefs of Police Association.

Definite steps have also been taken to include the four Associations of Railway Surgeons in Division I—Operating to be known as the Medical and Surgical section.

Report of Division I—Operating

The General Committee submitted a report reviewing the activities of the division since the last annual meeting of the Association. In addition to the matters which have already been closed the committee reported that it had under consideration an amendment to the A. R. A. Rule 1307 covering a proposed form for use in notifying train and engine employees of the presence and location in trains, of cars containing explosives or tank cars containing inflammable liquids, and recommended that the amendment be adopted by the Association.

In addition to submitting the reports of several committees and of the Telegraph & Telephone Section, which were submitted, the General Committee stated that it had approved the recommendation that the Committee on Freight Station Operation and Handling Freight be consolidated with the Committee of Service Efficiency of the Transportation division in order to eliminate duplication of work.

Division II—Transportation

Since its last report the division has considered many important subjects. Opportunity was given to study the practices inaugurated during the war period to determine whether or not such practices should be continued after the period of Federal control. A number of recommendations were submitted to the Executive Committee and by it approved for submission and ratification by the Association of Railway Executives in order that the rules and practices recommended could be established and made effective upon the termination of Federal control.

At the annual meeting of the division, October 20, action recommended with respect to the following subjects was approved:

Revision of the Codes of Per Diem and Car Service Rules

A special committee was appointed to consider and revise the Code of Per Diem Rules. The revised rules are in principle a continuation of those formerly in effect, the changes being in the direction of increased efficiency, particularly with respect to accounting.

Questions Relative to Car Service and Per Diem Rules

As directed by the Special Committee on Car Service Matters of the Association of Railway Executives, consideration was given to seven questions and answers are presented to the Association for its approval and endorsement of the position of the Transportation division that the present car service rules shall not be revised or any new rules promulgated for adoption until after the present rules shall have been given a fair trial by all railroads subscribers to the Car Service and Per Diem Agreement and the results from such a trial indicate that a revision of the rules is necessary.

Through Expedited Package Freight Cars

The general observation during the war of the sailing day plan was attended by marked transportation advantages and economies. Following the close of the war more or less objection was developed on the part of the shippers and the plan has since been greatly restricted. It is the belief of the division that this plan has exceptional merit and that the questions of delivery by shippers, etc., can be reasonably arranged and met. It is, therefore, recommended that the policy of developing and handling the movement of less carload freight in through expedited package freight cars to the fullest extent possible, consistent with efficiency and economy in transportation with due regard to the service afforded shippers, be adopted.

Revision of Car Service Rule 8

Statements were obtained from members showing cost of ownership of various types of passenger equipment for the calendar year 1918 and formed the basis for recommendation to increase the old mileage and per diem rates upon passenger equipment 60 per cent, which was submitted for a vote by letter ballot. The changes recommended were approved and made effective October 1, 1920.

Increase in Demurrage Rates

Effective February 10, 1918, demurrage rates were fixed at $3 for each of the first four days after expiration of free time, $6 for each of the next three days, and $10 per day thereafter. These rates remained in effect until July 20, 1919, when they were changed to $2 for each of the first four days, and $5 per day thereafter. As directed by the

Association of Railway Executives, the Demurrage Committee proposed to the National Industrial Traffic League that the demurrage rates which were in effect during the year 1918 be restored as an emergency measure to increase available equipment, and be made effective early in September, 1920. In the meantime, the Interstate Commerce Commission authorized the publication of a $10 per day penalty charge on all open-top cars and on all cars loaded with coal or coke not released within the free time as prescribed in the Demurrage Code. This penalty charge was published to take effect August 19, 1920, but was suspended by the Commission until December 17, 1920. A special committee was therefore appointed to confer further with the League, and, as a result, the following agreement was reached at a joint conference September 14:

(1) That the demurrage rates on all cars after expiration of free time be $3 for each of the first four days, $6 for each of the next three days, and $10 for each succeeding day.

(2) That under the Average Agreement, after a car has accrued four debits, the charge be $6 for each of the next three days, and $10 per day thereafter; debits which are not offset by credits to be charged at $3 each.

(3) These rates to be made effective October 15, or as near thereto as practicable, and remain in effect for a period of six months, when the question will again be made the subject of another joint conference.

(4) That with the adoption of these rates the $10 penalty charge on all open-top equipment and all cars loaded with coal or coke be withdrawn and cancelled.

(5) That appropriate committees representing the National Industrial Traffic League and the American Railway Association confer and agree upon revision of the rules governing allowances on account of bunching of cars by railroads, allowance for railroad failures, created by railroad strikes, and allowances on shipments which are frozen to such an extent as to prevent unloading within the prescribed free time.

The recommendations were endorsed by the National Industrial Traffic League, and accordingly application was filed to publish the agreed changes in Rules, 7, 8 and 9 of the National Car Demurrage Rules and make them effective on five days' notice.

The commission denied this application, making it necessary to publish the new rules on regular statutory notice to take effect December 1, 1920.

Uniform Code of Storage Rules

The Committee on Demurrage, Storage, Reconsignment and Diversion also revised the Code of Storage Rules, which were approved for submission to the United States Railroad Administration and made effective December 31, 1919. In the decision of the Interstate Commerce Commission July 20, 1920, in the matter of increased rates, the carriers were authorized to increase the storage rates 40 per cent in Official Classification territory, 25 per cent in Southern Classification territory, 35 per cent in Western territory and 25 per cent in Mountain-Pacific territory. These increased rates were published to take effect August 26, 1920.

Supervision of Demurrage, Track Storage and Storage Charges

During the period of Federal control, an effort was made to combine the supervision of demurrage, track storage and storage tariffs with the functions of the various weighing and inspection bureaus. Upon recommendation of the Transportation division, this plan was abolished. Upon request of representatives of the Traffic division and the National Industrial Traffic League, consideration has been given to a plan of supervision which will insure uniform application of the rules by all railroads.

Service Efficiency

The Committee on Service Efficiency was organied August 26, 1919, and its activities have been devoted to standard containers; packing, marking and handling of freight; loss and damage freight claims and prevention; loading regulations; weighing and inspection regulations, and general matters relating to transportation efficiency.

Mileage Allowance on Privately Owned Freight Equipment

The General Committees, Traffic and Transportation divisions, were directed to give consideration to the question of increasing the mileage allowances on privately owned freight equipment. Considerable data was collected and, after conferences with representatives of the private car owners, recommendations were submitted to the Executive Committee which form the basis of the changes in the mileage rates on refrigerator cars, effective August 31, 1920, and on other classes of equipment, November 1, 1920.

Recommendations have also been made to the Executive Committee on the following subjects:

Cancellation of per diem reclaims and per diem discrepancy claims between railroads operating under the Federal guarantee of net earnings during the period March 1 to August 31, inclusive.

Rules and charges governing the use, by private parties, of railroad owned freight cars.

Uniform method of settlement for car hire with industrial railroads.

Rules to provide compensation for excess empty movement of cars created by Orders of the Car Service Division and Service Orders of the Interstate Commerce Commission.

Continuance of Campaign for heavier loading of cars.

Solid freight train movement.

Division III—Traffic

The general committee of the Traffic division reported that the passage of the Transportation act and the return of the roads to private control had created such a change of status for the personnel of this division that it had been inadvisable for the members of the division to take up any work outside of their railroad duties. As a consequence, no definite recommendations were submitted other than to express a hope for the reorganization of the Traffic division and its re-establishment on a status that will enable it to proceed with a consideration of the various matters that seem to require national attention.

Report of Division IV—Engineering

The report of Division 4, Engineering, was presented in three parts, covering the activities of the Construction and Maintenance, the Electrical and the Signal sections, during the past year. The Signal section submitted a statement of specifications and standards adopted during the year or prepared for adoption but which await favorable result of letter ballot now in progress. For the construction and maintenance section the general committee submitted a large file of specifications and standards adopted at the meeting of the Construction and Maintenance section held on March 16, 17, and 18, 1920, at Chicago, (A. R. E. A. convention) with the recommendations that these be "approved as recommended practice and be made standard." These specifications and standards of practice are listed below:

(a) The proper depth of ballast.
(b) A form for cross-tie statistics.
(c) Specifications for carbon, steel rail; rail sections, 90-lb., 100-lb., 110-lb., 120-lb., 130-lb., and 140-lb.; standard drilling of rails.
(d) Plans for frogs, switches and fixtures; specifications, design and dimensions of manganese steel-pointed switches; cut track spike; screw track, spike; steel tie plates; wrought iron tie plates; malleable iron tie plates; relayer rail for various uses.
(e) Lighting of passenger station interiors, surroundings and platforms; toilet facilities at small stations where water supply and sewers are lacking.
(f) Specifications for plain and reinforced concrete and for steel reinforcement; methods of depositing concrete under water.
(g) Approach warning sign on public highways.
(h) Forms for reporting progress in construction and maintenance work; authority for expenditure; monthly report of expenditures; final record cost of work.
(i) Rules for inspection of bridges, trestles and culverts.
(j) Definitions of terms used in railway water service; water service organization; impounding reservoirs for railway purposes; water meters for railway water service; specifications for wooden water tanks; specifications for tank hoops.
(k) Rules for the location, maintenance, operation and testing of railway track scales.
(l) Specifications for steel railway bridges; column formula.
(m) Curve resistance—freight cars.
(n) Specifications for preservative treatment of wood—creosote, oil

and zinc-chloride; demarcation line between the use of creosoted and zinc-treated ties.

The report of the electrical section was submitted as information.

Report of Division V—Mechanical

The General Committee of the Mechanical division, which includes the Equipment Painting section, presented a report reviewing the activities of the division during the year, from which the following is taken:

Co-operation With Other Divisions of the A. R. A.

With a view of correlating the work of the engineering and mechanical divisions, each appointed a special committee to study the reports and discussions presented to the other which have a bearing on its own work. Upon the conclusion of such study the two special committees are to form a joint committee and make a report of their findings and recommendations to the general committees of the two respective divisions.

Conferences have been held with special conference committees of the Traffic and Transportation divisions and representatives of private car owners to consider publication in tariff form of the rule covering the payment for repairs to privately owned freight equipment. Conference committees on freight and passenger car repair shop layouts have been appointed to meet with the committee on Shop Construction of the Equipment Painting section to consider layouts of repair shops. A conference has been held by the Committee on Engine Terminals with the committee of the Engineering division on Shops and Terminals, and a similar conference has been arranged with the Committee on Repair Shop Layouts.

Letter Ballot

The recommendations contained in the reports from the following committees considered at the annual meeting, were referred to letter ballot:

Brake Shoe and Brake Beam Equipment.
Car Construction.
Car Wheels.
Electric Headlights and Classification Lamps.
Fuel Economy and Smoke Prevention.
Loading Rules.
Specification and Tests for Materials.
Standard and Recommended Practice.
Standard Methods of Packing Journal Boxes.
Superheater Locomotives.
Train Brake and Signal Equipment.
Train Lighting and Equipment.

With the exception of proposition H-2 of the Committee on Car Construction, which recommended that broken car ends be replaced with ends specified for new cars, all of the propositions submitted were approved by letter ballot, and the General Committee recommended approval by the Association.

Such approval was granted, except that the inside dimensions of box cars recommended by the Committee on Car Construction are to be referred to letter ballot of the members of the association.

Rules of Interchange

One of the most important changes in the Rules of Interchange was that in the methods of settlement for destroyed and damaged cars, as recommended by the Committee on Depreciation for Freight Cars. The committee recommended that destroyed and damaged freight cars be settled for on a basis of reconstruction costs. The Committee on Prices for Labor and Material accordingly prepared a revision of Interchange Rule 112 to provide for the new basis of settlement, the reproduction costs being figured on the per pound basis for the various classes of cars using the information prepared by the Presidents' Conference Committee on Federal Valuation of Railroads in the United States.

Interchange Rules Agreement

During the year practically all railroads and private car owners have executed the standard form of Interchange Rules Agreement.

Report of Division VI—Purchases and Stores

The General Committee of Division 6 reported that it had eighteen sub-committees investigating subjects pertaining to the service of supplies. These committees, consisting of from three to eight members have held service meetings and completed reports from the majority of these committees were presented, discussed and adopted at the first annual meeting of the Section.

The reports of the following committees were approved by the Section at the annual meeting and the Executive Committee presented them with the statement that their adoption and application will benefit and increase the service of supplies on all railroads:

Subject 1—Stores Department Book of Rules.
Subject 3—Reclamation of Material.
Subject 7—Stationery, Purchasing, Storage and Distribution.
Subject 10—Scrap, Classification and Handling of Sales.
Subject 11—Ice, Purchasing, Storage and Distribution.
Subject 12—Purchasing Agents' Office Records.
Subject 13—Lumber, Purchasing, Inspection and Distribution.
Subject 14—Rails, Handling and Distribution.
Subject 15—Buildings and Structures.
Subject 16—Supply Train Operation.

A procedure and uniform method of material accounting was presented at the annual meeting and it was decided to submit this to the Railway Accounting Officers' Association for any suggestions the membership of that organization might have to make before it is presented for adoption by the American Railway Association.

Report of Division VII—Freight Claims

The General committee of Division VII—Freight Claims, presented a report containing a review of its activities during the past year, adding:

"Under date of November 12, 1919, the General committee made certain recommendations to the Executive committee concerning the inauguration of an active and energetic campaign for the reduction of freight losses and damages, report of which recommendations was duly made at both the special session in March and the annual session in June. Authority not having been received from the Executive committee at the time of the annual session, the General committee, in view of opinions expressed by resolution at the annual session, found it necessary to change its recommendations to the Executive committee, and to request an appropriation of not exceeding $20,000 per annum for the employment of paid representatives to work in connection with and under the jurisdiction of our Committee on Cause and Prevention. This authority was later received from the Executive committee (whose action was also approved by the Advisory Committee of the Association of Railway Executives), and the Freight Claim Division has recently entered actively upon its campaign to reduce the economic waste resulting from losses of and damages to freight.

"The freight claim division is working in close harmony and co-operation with the other divisions of the association and feel that this harmony and co-operation are particularly necessary in order that a substantial reduction may be made in the causes which give rise to loss and damage claims. The importance of overcoming these transportation failures becomes more apparent when it is realized that the amounts paid in the settlement of freight loss and damage claims is in each case a reduction in the net earnings of the carriers. In other words, were there no loss and damage, the net earnings of the carriers would be increased by the more than one hundred million dollars now being paid out in the settlement of claims."

Report of Division VIII—Perishable Freight

The report for Division VIII—Perishable Freight—outlined the work of that division since its creation on July 1, 1920, when it took over the duties previously within the scope of the former committee on Perishable Freight of Section IV—Traffic, and the former committee on Perishable Freight of Section V—Transportation.

The following recommendations were offered for adoption by the association:

Recommended, That the inspection of fruits, vegetables and other perishable freight as may be necessary by carriers' own representatives at points of origin, destination, etc., be encouraged and extended, looking forward to the future development of centralized control of the transfer of inspectors from one producing district to another as the volume of movement requires.

Recommended, That the practice of furnishing shippers and receivers of perishable freight any records of icing or other protective services (except on regular bills rendered in the course of ordinary business) be discontinued, for the reason that the supplying of such data on postal cards or other form is a duplication and results in unnecessary and increased expense.

Conference Committee on Grain

The association's conference committee on grain presented a report of its work following the Interstate Commerce Commission's "investigation of the practices of shippers and carriers with respect to the filing, investigation and disposition of claims for loss and damage of grain." Following the Commission's report, the shippers' and carriers' conference committees submitted separate reports with the result that the Commission promulgated and tentatively endorsed:

1. Rules for the handling of bulk grain in interstate commerce and the filing, investigation and disposition of claims for loss and damage incident thereto.
2. Specifications for automatic scales, hopper scales, track scales and other shippers' facilities.
3. Specifications for temporary grain doors and grain door lumber.
4. Directions to shippers for inspecting and coopering cars for bulk grain.

These rules were presented in full in the report.

Senator Cummins Proposes Railroad Legislation

WASHINGTON, D. C.

CHAIRMAN CUMMINS, of the Senate committee on interstate commerce, has announced a program of additional railroad legislation which he will press for enactment at the coming sessions of Congress. At the short session which convenes in December he will endeavor to obtain the passage of a bill he introduced at the close of the last session, to amend the valuation act by striking out the words which direct the Interstate Commerce Commission to report separately the "original and present cost of condemnation and damages or purchase in excess of the original cost or present value" of railroad land.

At the first session of the new Congress he will also attempt to have adopted two amendments to the transportation act embodying the anti-strike and compulsory consolidation provisions of the Senate railroad bill which were not approved by the House.

The Senator has just returned to Washington after having been re-elected by a majority of 210,000 against the opposition of the Plumb Plan League, the American Federation of Labor, the railroad brotherhoods and certain farmers' organizations that concentrated on an especially bitter campaign against him on the issue of the railroad law.

Senator Cummins feels that a compulsory consolidation of the railroads into a limited number of systems, as proposed in the railroad bill as it passed the Senate, is necessary to insure the satisfactory operation of the transportation act, by effecting a greater equalization of the earning power of different roads. The theory of the law is to allow rates which will produce a 5½ or 6 per cent return on the aggregate value of the roads, which means that it sets up an average standard of reasonableness. In recognition of the fact that under given rates certain roads will earn a high percentage while others will earn an inadequate return the law provides that a part of the excess earnings of the more prosperous systems shall be turned into a fund which may be used to assist the weaker roads to some extent by loans. It has been well understood that this affords a very inadequate protection for the road which is below the average standard of prosperity for any reason and the question as to how much can be accomplished by increasing the divisions which the weaker lines receive out of the through rates is somewhat doubtful and has not yet been tested. Senator Cummins has long held the idea that if the railroads could be consolidated into systems made up of both strong and weak lines many of the most troublesome problems incident to rate regulation would be done away with and three different carefully worked out plans have been submitted to and considered by his committee under which the roads could be grouped into competitive systems whose net returns would not differ by more than ¼ per cent.

Senator Cummins believes that such a plan of consolidation could not be worked out except under a plan of federal incorporation, to which there is much opposition in the states, and that therefore it is not to be expected that his proposed amendment can be easily put into the law, but he intends to make the fight.

The proposal for the amendment to the valuation act arises from the situation involved in the Kansas City Southern case which was decided last May by the Interstate Commerce Commission. The commission had reported that the cost of acquisition of railroad land in connection with an estimate of the cost of reproduction was impossible of ascertainment and that the figure if ascertained would be of no value under the decision of the court in the Minnesota rate case, but the court held that the commission must comply with the requirement of the law and report the cost of acquisition of land. The decision has delayed the serving of valuation reports and the state commissions have been active in demanding the amendment to the law which Senator Cummins proposes to urge. He concurs with the views of the commission that the requirement of the law as it stands is impractical and he also believes that the item in question should not be considered in valuing the railroads.

The opposition of the labor leaders to the Senator's re-election was based largely on his insistence upon an anti-strike law, and while at the primaries most of the railroad men in his state voted against him he believes that a large percentage voted for him at the election following the campaign. This has convinced the Senator that the railroad employees themselves, regardless of the position of their leaders, are coming to believe that government regulation of wages as provided in the transportation act is more to their advantage than the right to strike, while he believes that after provision has been made in the law for the adjudication of wage disputes by an impartial tribunal it is not right to leave the question of obedience to the decision of the labor board entirely in the hands of the labor organizations. He pointed out that a strike against an award of the labor board would really be a strike against the government.

In the newspaper interview Senator Cummins pointed to the fact that the September earnings of the railroads were below the 6 per cent standard as evidence that the rate-making rule of the law does not constitute a guaranty of earnings.

Manganese Steel in Track Work*

By J. B. Strong
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MANGANESE STEEL as usually furnished, is a metal containing 10 to 14 per cent of manganese, 1 to 1.40 per cent of carbon, not over 0.10 per cent of phosphorus, not over 0.06 per cent of sulphur and 0.25 to 0.40 per cent of silica, the remainder being iron. The peculiar merit of manganese steel in resisting abrasive wear results from the combination of strength and ductibility. It is only moderately hard and will not maintain a cutting edge, but is very strong and tough and cannot be machined commercially at normal temperature except by grinding.

Manganese steel was first used in track work in America on street railways in 1894 and on steam railways in 1901. Its use increased rapidly from about 1,000 tons a year in 1903 to nearly 10,000 tons a year in 1913; since which time, owing to but little new construction work and deferred maintenance and other causes, the annual consumption has decreased somewhat.

Economy has been the first reason for the introduction and increased use of manganese steel in track work to meet severe service conditions. Nowhere in track work has manganese steel proved of such economy as on the turnout switch point which takes the heavy side thrust wear for train movements into the turnout or crossover. Manganese steel gives the greatest efficiency when subjected to wear without pounding, as on a switch point where its life as compared with carbon steel is phenomenal. It is not unusual to get records of 10 to 20 times the life of a carbon rail point.

The Track committee of the American Railway Engineering Association, in conference with the Standardization committee of the Manganese Track Society and the Manganese Steel Founders' Society, has developed plans for many units of special track work. In these designs the first consideration was to provide a manganese steel wearing surface to take all extra shock and wear incidental to carrying wheels across the intersection of the gage lines at the frog point for both facing and trailing train movements. Manganese steel is carried into the throat, and also into the wing flare to take care of wheel flange wear on both sides for wheels entering the frog. The tread surface is provided sufficiently wide to take the wear of badly worn double flanged wheels. Other considerations were the lapping of the manganese steel wearing thread surface with the open hearth rail so that the change from one to the other would not be abrupt, attaching the open hearth rails securely to the manganese casting and to each other for a rigid structure; providing straight lines where possible for economy of machine work and fabrication; distributing metal for strength and sound castings. This is one of the most important as manganese, in cooling, has a shrinkage about double that of other steels and the annealing process of quenching from a high heat in water is severe and necessitates careful attention to the correct distribution of metal to avoid excessive internal strains.

A manganese frog properly installed and maintained should give a life approximately equal to that of adjacent open hearth rail. I have records of manganese rail bound frogs maintained in service for 275 millions tons traffic and then being removed on account of the wear on rail arms and adjacent rails rather than wear of the manganese steel.

Manganese steel turnout frogs will give better comparative life than crossing frogs, for as the angle increases up to 90 deg. the pound at the intersection increases, which manganese steel cannot so well withstand.

Roughly it might be stated that 90 deg. manganese steel crossing frogs giving over double the life of open hearth carbon steel are doing well, while as the angle decreases we secure a greater life down to a No. 10 turnout frog which gives 6 to 10 times greater life than open hearth carbon steel.

*Presented before the St. Louis Railway Club, St. Louis, Mo., on September 23.

Freight Car Performance in September

WASHINGTON, D. C.

THE TOTAL net ton miles of freight handled by the railroads in September amounted to 40,999,843,000, according to the monthly bulletin of freight car performance compiled by the Bureau of Railway Economics. This was less than the record-breaking total for August, which was 42,706,835,000, but the decrease is more than accounted for by the fact that September has one less day than August and that it included the Labor Day holiday, and the total was greater than the total recorded for any other previous month. In September, 1919, according to the Railroad Administration statistics, the net ton miles aggregated 38,860,311,000, and in September, 1918, 38,592,137,000. The ton miles for October should show an even greater total than August, as the average weekly car loading in October was about 995,000, as compared with 963,000 in August and 950,000 in September.

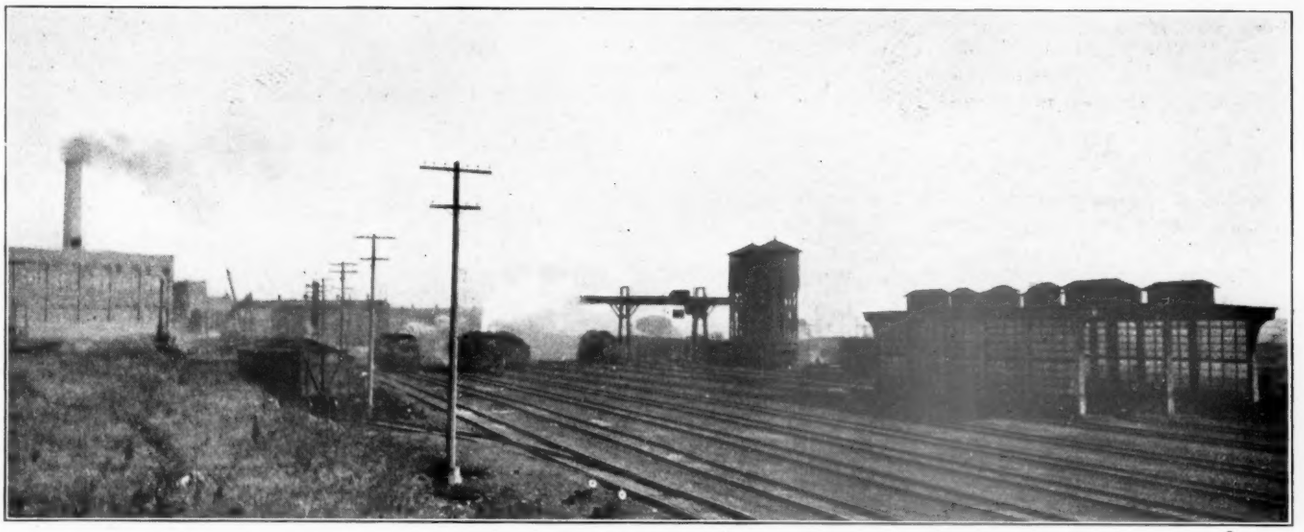
The statistics also record a further gain in efficiency as compared with the record for previous months. The average number of tons per loaded car in September was 30, which equals the standard set by the railway executives at their meeting in July. This compares with 28.3 in September, 1919, 29.7 in September, 1918, and 27 in September, 1917. It is the largest average car load for a month since August, 1918, when the average carload was 30.1. In August, 1920, the average car load was 29.8.

The average miles per car per day showed a further increase in September to 28.1, as compared with 26.5 in September, 1919, 26.8 in September, 1918, and 26.6 in September, 1917. This average exceeds that for any month while the railroads were under federal control but it was exceeded in May June and July, 1917.

The total freight car miles were 2,041,245,000, of which 67 per cent were loaded car miles. The total number of freight cars on line daily was 2,417,447, of which 173,229, or 7.2 per cent, were unserviceable. For August the percentage of unserviceable cars was 7.1. In September, 1919, it was 8.5. The bureau's compilations are summarized in the accompanying table.

FREIGHT CAR PERFORMANCE, SEPTEMBER, 1920

	Average miles road operated	Net ton miles (thousands)	Frt. car-miles (thousands)			Freight cars on line daily			Efficiency ratios	
			Total	Loaded	Per cent loaded to total	Total	Unserviceable	Car-miles per day	Tons per car	Per cent of unserviceable cars
New England Region	8,160.47	1,059,206	59,277	42,014	70.9	108,625	9,854	18.2	25.2	9.1
Great Lakes Region	22,093.14	7,108,314	364,662	242,691	68.6	459,171	37,036	26.5	29.4	8.1
Ohio-Indiana-Allegheny Region	26,567.38	9,975,181	414,121	274,840	66.4	600,784	34,490	23.0	36.3	5.7
Pocahontas Region	5,339.29	2,465,622	96,494	57,719	59.8	86,717	7,544	27.1	42.7	8.7
Southern Region	37,724.13	4,795,985	251,130	171,168	68.2	269,495	20,683	31.1	28.0	7.7
Northwestern Region	47,423.56	5,812,650	302,822	202,484	66.9	342,894	27,238	29.4	28.7	8.0
Central Western Region	52,202.71	6,907,378	391,910	266,028	67.9	339,332	25,187	38.5	26.0	7.4
Southwestern Region	32,072.69	2,875,507	160,829	109,907	68.3	210,169	11,147	25.5	26.2	5.3
Grand total, all regions	231,583.37	40,999,843	2,041,245	1,366,849	67.0	2,417,447	173,229	28.1	30.0	7.2



A Good Terminal Lay-Out Is a "Thing of Beauty and a Joy Forever"

The Locomotive Terminal as an Operating Factor*

With Intensive Railroad Operation, Adequate Terminal Facilities Are Imperative

By L. G. Plant,
Associate Editor, *Railway Age*

FROM AN OPERATING STANDPOINT it may be said that there are some facilities which are indispensable to the enginehouse, while the necessity for certain machine tools and other special equipment may depend upon the proximity of the terminal to the backshop. With the increasing weight of locomotives and the growing appreciation of the value of every locomotive service hour, we are faced, however, with the practical necessity of doing more and more heavy repair work in the locomotive terminal.

It is important, therefore, that in all new terminal projects this situation be taken into account and the enginehouses be fully equipped for any repairs that may reasonably be anticipated. In some of the most recent and important terminal developments, the enginehouse in reality approaches the modern erecting shop in design and equipment. These roundhouses comprise about 30 stalls occupying approximately a semi-circle. The depth of the house is 115 ft. and it has a cross-section which resembles that of an erecting shop of a three-bay construction. This includes a lofty bay, in which a 75 ft. 15-ton crane operates along the outer side of the house, and two lower bays at the turntable side. The outer wall, which rises to a height of nearly 40 ft., is comprised almost wholly of steel sash, which together with continuous monitor windows 15 ft. in height over the lower bays, provide unsurpassed natural illumination. In fact, this might be appropriately styled the "Round House Beautiful."

"The Round House Beautiful"

Adjustable standpipes, resembling water cranes are located between the stalls in such a position that they may be fitted over each locomotive stack. All smoke and gases are then removed by means of a down draft system so that there are no smoke jacks to interfere with the operation of a crane throughout the entire circumference of the house. Separate drop pits are installed to serve trailing, main and engine truck wheels. The machine tool equipment at these terminals ranges from a comparatively small number of machines located in an annex to the roundhouse to a full complement of heavy machine tools in an adjacent erecting shop. The annex equipment includes a wheel lathe, boring mill, planer, motor driven lathes and unwheeling hoist, while the shop adjacent to other enginehouses has the traveling crane and other equipment conventional to erecting shop lay-outs.

It should be mentioned in this connection that the down draft feature above mentioned is relied upon in building fires thus eliminating the use of the steam blower and blower lines. While a blower fan is installed to create the necessary down draft, the stack erected outside of the house is of sufficient height to effect a strong natural draft when the fan is not in operation. The effect of standing in one of these new roundhouses, free from smoke and the noise of exhausting steam, with the light streaming in the tall windows and a crane operating briskly overhead, is truly inspiring to one accustomed to the atmosphere of the average roundhouse.

In fact it is not beyond the range of possibilities to conceive of a development in locomotive terminals along these lines that would supersede many of the functions of the central erecting shop. While this is a subject more closely related to locomotive maintenance than to operation the question may well be raised as to whether better results could not be obtained from an operating as well as a maintenance standpoint if facilities were such that it would be practical to keep locomotives in good condition by frequent and adequate terminal repairs, rather than by executing only the most urgent repairs in the terminal and relying largely on periodical backshop operations.

Of the particular features regarded as essential to the most successful operation of terminal enginehouses, those

*This is the second part of a paper read before the New England Railroad Club, November 9, 1920. The preceding part of this article was published in the issue of November 19, and the article will be concluded in the next issue of the *Railway Age*.

which tend to reduce labor costs are of the first importance. On this ground a traveling crane or electric tractor that would have been considered an extravagance ten years ago might well be regarded as a necessity on the basis of present labor costs.

The Most Important Facilities

Splendid results, however, can be obtained by equipping the roundhouse with two jib cranes between each stall, located so as to swing over both ends of the locomotive boiler. It is entirely practical to build a jib crane with a toggle joint which will enable it to swing in a complete circle of 15 ft. radius about the column and to equip these jib cranes with two-ton chain hoists. In fact, some foremen would prefer a roundhouse well equipped with jib cranes of this character to having a traveling crane where the repairs required are not too heavy.

The only definite suggestion which can be advanced in regard to this feature of roundhouse equipment is that in all new projects where the development is on an extensive scale the enginehouse should be made ample in size and equipment to allow for a wide variety of repair work without interference with the routine operating functions. The equipment in such cases should include the overhead traveling crane and down draft ventilating apparatus. Where the activities of the enginehouse are limited to routine operating functions, the use of jib cranes is satisfactory and, if supplemented by an electric monorail or storage battery tractors, will meet every practical requirement.

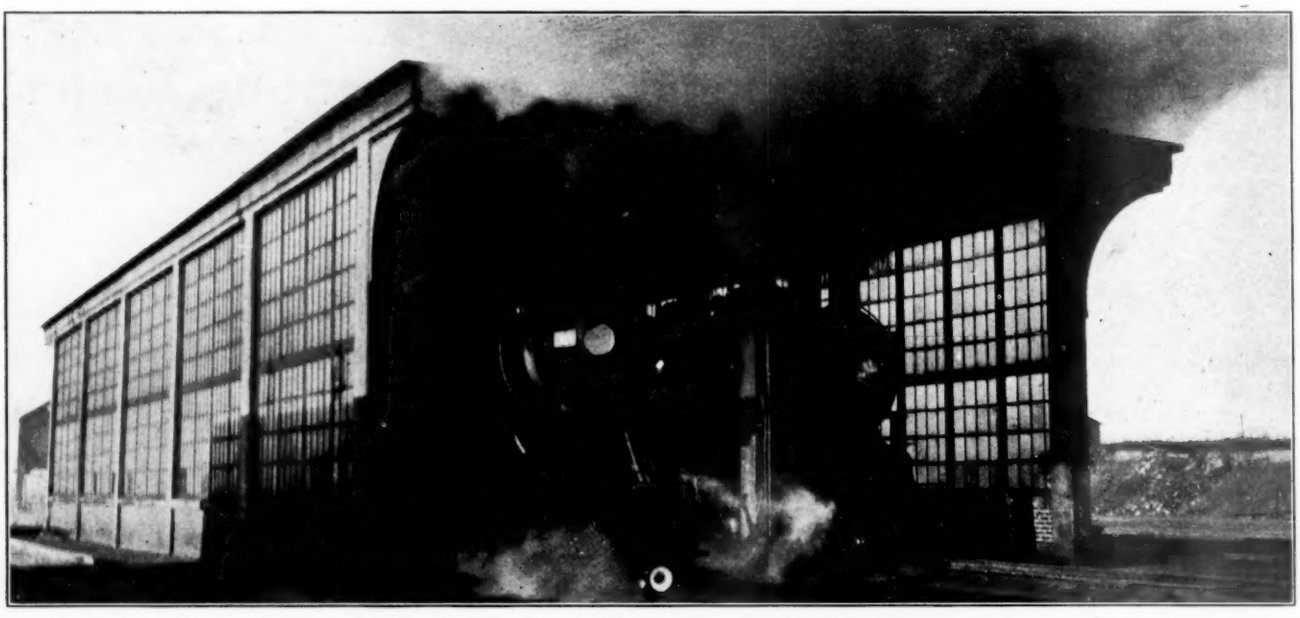
Nothing need be said in regard to drop pits further than that they, or the equivalent in the form of an unwheeling hoist, are essential to any locomotive terminal responsible for the maintenance of power in satisfactory running condition between shoppings. A number of well arranged drop pits are preferable to a single unwheeling hoist in the roundhouse, but where an annex is designed to care for the heavy repair work originating in the terminal, the unwheeling hoist would appear to be the most practical apparatus for such shop facilities.

It may also be said in a general way that the heating of enginehouses by steam or air even in the southern states is essential and that good ventilation and lighting are very important. Good floors will further contribute indirectly to the prompt movement of power through the enginehouse. The operation of the hot water washout system has a direct effect on the operation of the railroad by reducing the time locomotives must be held in the enginehouse as well as exerting a very wholesome effect on boiler maintenance and no locomotive terminal is in any sense complete without this equipment.

Operation of Locomotive Terminals

While it would be as impossible to prescribe any fixed mode of terminal operation as to describe equipment that would be universally applicable, there are certain operations in the terminal that are fundamental. Moreover all terminal operations should proceed with as great regularity and as much expedition as possible. *Terminal operations constitute an unwritten page on every timetable and should be conducted accordingly.*

The habit of waiting until repairs are actually completed before advising the transportation department that the locomotive is available for service cannot be too strongly condemned. The time at which a locomotive will be available for service should be anticipated as far as possible and the transportation department notified accordingly. It is better to assume responsibility for an unavoidable delay than to be the cause of frequent unnecessary delays.



Preliminary Inspection at Covered Pits Will Expedite Terminal Operation

An accurate knowledge of the work required on every locomotive arriving at the terminal is obviously essential to the successful execution of that work, hence thorough locomotive inspection is the only safe foundation upon which terminal operations can proceed successfully. There are very few railroads today on which the work reports submitted by locomotive engineers can be depended upon as a reliable index to the work to be done. Enginemen cannot be relieved of the responsibility for a locomotive condition report and something might be said in favor of educating the engineers to submit a more intelligent report but as matters stand the most careful inspection of arriving locomotives must be made.

More might be said in favor of educating air brake and other inspectors responsible for inspecting locomotives upon arrival at the terminal. Frequent changes in the personnel of the inspection force and appointment on the basis of seniority are bound to result in a certain amount of incompetence in the inspection of locomotives. The railroads will surely be held responsible in the event of accidents resulting

from incompetent inspection and if they cannot always pick trained men for this work they should see that instruction of some sort is available to these men. The air brake instruction car should not only be available to every air brake inspector, but these men should be subject to certain examinations that will serve to establish their competence.

Inspection may either be conducted immediately upon arrival or as soon as the locomotive is placed in the house. Where locomotives arrive at frequent evenly spaced intervals throughout the day, the system of outside inspection in covered pits has very great advantages. The delay over the inspection pit should not average in excess of 15 minutes and a statement of the work required of each gang foreman may be available before the locomotive has actually been placed in the house. Moreover, an advance report in regard to the condition of the locomotive frequently makes it more practical to assemble the necessary material in time so that there is no delay on this account.

On the other hand, at terminals where comparatively few locomotives are handled or where locomotives arrive at very irregular intervals, it becomes uneconomical to maintain an outside inspection force. Where an inspection in the enginehouse is promptly made upon the arrival of every locomotive there can be no serious objection to this method. In fact, there is frequently a great advantage to conducting inspection in the enginehouse since it is frequently practical and economical to have inspectors make repairs on certain classes of defects. Locomotive inspection should be subdivided as far as possible. Excellent results are often obtained from assigning one inspector to certain defects that have been causing serious trouble. For instance, it is the practice on one railroad that has made a conspicuous success of Mallet locomotive operation, to assign one mechanic and assistants at each terminal during the winter months to inspect and repair steam leaks exclusively.

Intensive Locomotive Terminal Operation

One of the most remarkable examples of intensive terminal operation in this country is accomplished by departing boldly from the conventional routine. Approximately 170 locomotives are handled through this terminal each day and as each of these locomotives arrives it is first subjected to the most thorough inspection. There are three parallel inspection pits under the direction of a foreman inspector. The number of men and the facilities at this inspection point are such that many light repairs can be executed during the time that the inspection is being completed. Upon the basis of the reports made by each of the principal inspectors, the foreman decides whether the character of repairs necessitates placing the locomotive in the enginehouse. Where the repairs are not of a heavy nature and do not require the services of a drop pit or crane the locomotive after passing over the ash pit is routed directly to a longitudinal repair shed. This shed covers two parallel track pits approximately 400 ft. in length. The building is of concrete and steel sash construction and the illumination, both overhead and in the pits, is very complete. The work at this repair shed is under the direction of an assistant roundhouse foreman and the number of mechanics employed is equal to any emergency. Moreover the stores department has erected special facilities to provide for the material requirements at this point. While the work in this light running repair shed is conducted with the same degree of system and thoroughness as should characterize roundhouse work, it will readily be appreciated that these repairs can be executed far more expeditiously under the circumstances than were it necessary to place each locomotive in the enginehouse. In fact, it would be practically out of the question to handle 170 locomotives in and out of a 30-stall roundhouse each day and the general plan adopted at this point is one that might well be put into effect at other points where fewer locomotives are handled.

The successful operation of any locomotive terminal is more dependent upon supply department co-operation than any other mechanical unit. Very few parts can originate at the terminal and yet the continuity of all terminal operations depends upon having certain materials on hand at a certain time. The locomotive terminal is no place for the execution of undue economy in curtailing material stocks. It would be far better to have a considerable surplus than a slight shortage. Moreover it must be borne in mind that the most careful check of past material issues may prove an entirely unreliable index to future requirements at the locomotive terminal.

Stores Department Co-operation

In general, it might be well to draw a distinction between commodities that are common to the entire railroad and specialties that are identified largely with terminal operation. Such specialties should be stored in as close proximity to the engine terminal as possible and should be under the direction of storekeepers that are thoroughly conversant with engine terminal requirements.

It is inevitable that on frequent occasions, material which can neither be manufactured nor kept in stock at the terminal should be urgently needed. It is not an unfrequent occurrence for passenger trains to be seriously delayed, particularly during the winter months, due to loading and unloading locomotive parts destined to some outlying terminal.

The institution of a regular bi- or tri-weekly baggage car service from a central manufacturing shop to outlying terminals will prove an excellent means for relieving this unsatisfactory situation. They can be alternately dropped and picked up at each terminal by local passenger trains. While this may not wholly relieve the emergency shipment of some items, it may prove a much more systematic and economical method than that of loading everything up to driving wheel tires on the back of a locomotive tender.

It will also be found that the service of supply can be of the greatest assistance to terminal operation in connection with the handling of tools and oil cans. It is safe to say that no two small items can give the roundhouse foreman more concern. At one terminal where this matter is dealt with quite successfully, a platform at the height of the average locomotive deck has been erected adjacent to the incoming and outgoing tracks. Here all tools and cans are removed from each incoming locomotive and carefully checked over by a representative of the stores department. The same department is responsible for delivering a full complement of tools and oil cans properly filled to each outbound locomotive.

Car Loading Decreases

WASHINGTON, D. C.

THE REVENUE freight car loading for the week ending November 6 showed a further reduction as compared with the previous week, following a reduction in the last week of October. The total was 910,592 cars, as compared with 826,724 in the corresponding week of 1919 and 873,854 for 1918. This represented a reduction of 63,000 in a week but is probably accounted for largely by the fact that the week included election day. There were increases as compared with the corresponding week of 1919 in the loading of coal, coke, forest products and ore, but reductions in grain and grain products, livestock and l. c. l. and miscellaneous. Most of the reductions as compared with previous weeks also come under the head of miscellaneous freight, as shown in the table at the top of the next page.

For the week ending November 13 the total car loading was slightly greater than for the preceding week, 919,909 cars, as compared with 808,304 in the corresponding week of 1919 and 810,430 in 1918. This shows not only a larger total than for the corresponding weeks of the past two years but

less of a reduction as compared with the preceding weeks than was shown in 1919 or 1918. The November figures in 1919 were somewhat affected by the coal strike, which began on November 1, but the big reduction in 1918 followed the armistice on November 11. The summary compiled by

While these figures show a falling off as compared with the first three weeks of October, the fact that a similar reduction was shown in the corresponding figures for 1919 and 1918 indicates that it is to a large extent seasonable, while the figures for the first week in November were affected by

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS; COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO, FOR WEEK ENDED SATURDAY, NOVEMBER 6, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.	Miscellaneous	Total revenue freight loaded: This year 1920	Total revenue freight loaded: Corresponding year 1919	Total revenue freight loaded: Corresponding year 1918	Received from connections: This year 1920	Received from connections: Corresponding year 1919	Received from connections: Corresponding year 1918
Eastern	1920	5,397	3,334	48,844	3,044	6,991	10,869	47,341	86,589	212,409	....	....	244,007	....	....
	1919	6,287	3,919	29,575	3,573	6,933	5,192	22,360	122,142	....	199,981	206,932	....	224,279	241,972
Allegheny	1920	2,748	3,800	61,079	9,168	3,831	12,476	39,329	65,391	197,824	....	....	138,613	....	....
	1919	2,822	3,897	36,637	4,095	4,132	8,815	44,890	70,098	....	175,386	204,997	....	117,669	191,059
Pocahontas	1920	111	275	21,916	610	1,953	181	2,638	6,623	34,311	....	....	18,369	....	....
	1919	198	286	19,632	664	2,070	289	237	9,971	....	33,247	35,106	....	19,246	23,981
Southern	1920	2,454	2,676	27,878	1,744	17,175	2,617	37,083	33,301	124,928	....	....	67,268	....	....
	1919	3,070	2,704	7,912	557	18,062	2,498	21,152	57,560	....	113,515	116,791	....	72,177	73,390
Northwestern	1920	11,809	8,077	10,669	3,617	21,088	28,997	28,293	34,868	147,418	....	....	54,360	....	....
	1919	11,931	10,814	11,673	2,584	16,272	11,792	22,177	44,154	....	131,397	139,571	....	55,211	76,050
Central Western	1920	9,311	10,954	25,153	517	5,212	2,674	30,254	45,759	129,834	....	....	65,837	....	....
	1919	10,719	15,245	5,427	387	4,820	2,767	22,773	55,242	....	117,380	114,687	....	68,671	62,169
Southwestern	1920	3,430	2,264	7,068	114	7,263	182	17,059	26,488	63,868	....	....	50,471	....	....
	1919	4,194	3,403	1,261	83	6,488	373	12,865	27,151	....	55,818	54,870	....	46,979	45,687
Total, all roads	1920	35,260	31,384	202,607	18,814	63,313	57,998	201,997	299,019	910,592	....	....	638,925	....	....
	1919	39,221	40,268	112,117	11,943	58,777	31,725	146,354	386,318	....	826,724	....	....	604,232	....
	1918	....	....	....	....	....	....	....	....	....	....	873,854	....	....	714,308
Increase Compared	1919	....	....	90,490	6,871	4,736	26,278	55,643	....	83,868	....	....	34,693	....	....
Decrease Compared	1919	3,961	8,884	....	....	....	....	....	87,299	....	....	....	....	....	....
Increase Compared	1918	....	....	....	....	....	....	....	....	36,738	....	....	....	....	....
Decrease Compared	1918	....	....	....	....	....	....	....	....	....	....	....	75,383	....	....

*L.C.L. merchandise loading figures for 1920 and 1919 are not comparable as some roads are not able to separate their L.C.L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

the Car Service Division for the week ending November 13 follows at the bottom of the page.

The volume of freight which the railroads have been carrying is still greater than that for corresponding periods of previous years and it will take a much greater reduction than has thus far been shown in the reports to prevent the year 1920 from breaking all previous records for the amount of freight handled.

For the first nine months of 1920, according to the Interstate Commerce Commission reports and those compiled by the Bureau of Railway Economics, the net ton miles of freight handled aggregated 332,052,000,000 in 1918. For the period since September the only available traffic index is the following weekly car loading report compiled by the Car Service Division of the American Railway Association:

October	9	1,009,781	982,171	959,723
	16	1,005,663	972,078	927,134
	23	1,010,961	977,051	920,111
	30	973,120	935,479	892,392
November	6	910,592	826,724	873,854
	13	919,909	808,304	810,430
		5,830,026	5,501,807	5,383,644

the light business on election day. From November 6 on the comparisons will be made with the periods when railroad traffic was considerably reduced in 1919 by the coal strike which occurred in November, and in 1918 by the cessation of war activity following the armistice of November 11. The weekly car loading figures for the closing weeks of 1919 and 1918, with which comparisons are to be made for the balance of this year, as compiled by the Railroad Administration, were as follows:

		1919	1918
November	15	825,458	810,430
November	22	884,150	857,377
November	29 (Thanksgiving Day week)	753,757	735,628
December	6	813,086	837,806
December	13	779,265	820,202
December	20	831,951	796,116
December	27 (Christmas week)	676,670	549,975

For the week ending November 15 the car shortage was 35,356 and there were surpluses amounting to 19,865 cars. There was a surplus of 12,000 cars in the Central Western district and a surplus of 3,000 cars in the Southern district.

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS: COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. FOR WEEK ENDED SATURDAY, NOVEMBER 13, 1920

District	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.*	Miscellaneous	Total revenue freight loaded: This year 1920	Total revenue freight loaded: Corresponding year 1919	Total revenue freight loaded: Corresponding year 1918	Received from connections: This year 1920	Received from connections: Corresponding year 1919	Received from connections: Corresponding year 1918
Eastern	1920	5,544	3,617	55,656	3,020	7,119	9,603	45,320	88,211	218,090	.....	.....	239,978	.....	.....
	1919	6,628	4,434	26,998	3,341	7,215	4,815	33,136	110,651	.....	197,208	190,257	.....	231,568	228,983
Allegheny	1920	2,779	4,209	73,128	6,472	3,914	11,941	38,046	68,738	209,227	.....	.....	139,647	.....	.....
	1919	2,963	4,085	31,651	4,331	4,417	6,699	42,452	71,932	.....	168,530	177,424	.....	129,625	169,216
Pocahontas	1920	121	280	24,949	560	1,959	178	2,427	6,120	36,594	.....	.....	18,585	.....	.....
	1919	213	326	21,300	639	1,783	220	161	9,423	.....	34,065	36,126	.....	18,828	23,992
Southern	1920	2,763	2,635	29,964	1,296	17,667	2,711	37,415	35,657	130,098	.....	.....	69,885	.....	.....
	1919	3,190	3,205	7,980	291	18,104	2,468	19,891	59,917	.....	115,052	114,472	.....	73,961	73,283
Northwestern	1920	11,356	10,702	11,209	1,919	14,426	21,974	27,817	32,257	131,660	.....	.....	52,698	.....	.....
	1919	11,459	9,719	11,483	756	14,265	12,755	21,230	42,515	.....	124,182	128,298	.....	52,144	71,734
Central Western	1920	8,243	14,581	25,891	472	4,779	2,715	29,262	44,119	130,062	.....	.....	65,583	.....	.....
	1919	10,452	15,836	3,676	467	5,356	2,664	22,071	53,076	.....	113,598	108,834	.....	70,208	58,527
Southwestern	1920	3,491	2,999	7,238	155	7,665	239	16,532	25,859	64,178	.....	.....	49,658	.....	.....
	1919	4,416	3,515	1,150	117	6,627	320	12,576	26,948	.....	55,669	55,019	.....	46,070	45,946
Total all roads	1920	34,287	39,023	228,035	13,894	57,529	49,361	196,819	300,961	919,909	.....	.....	636,034	.....	.....
	1919	39,321	41,120	104,238	9,942	57,767	29,941	151,513	374,462	.....	808,304	.....	.....	622,464	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	810,430	.....	.....	731,681
Increase compared	1919	.....	.....	123,797	3,952	.....	19,420	45,306	.....	111,605	.....	.....	13,630	.....	.....
Decrease compared	1919	5,034	2,097	.....	.....	238	.....	.....	73,501	.....	.....	.....	.....	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	109,479	.....	.....	.....	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	95,647	.....	.....

*L.C.L. merchandise loading figures for 1920 and 1919 are not comparable as some roads are not able to separate their L.C.L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

Hoover Heads American Engineering Council

First Meeting of the New Federated American Engineering Societies Held at Washington, D. C.

THE FEDERATED American Engineering Societies has at last become an independent organization and the work of the Joint Conference Committee of the four founder societies has come to an end. The first meeting of American Engineering Council, its representative group, was held at Washington in the New Willard Hotel on November 18, 19 and 20. Herbert Hoover, former food administrator, becomes the active head of the new council, having been unanimously elected president. A total of 21 member societies and nine societies, which have not as yet taken final action, participated in the work.

E. S. Carman, temporary chairman, presided and the real work began with the selection of nominating committees for the executive officers and the members of the executive board. As reported in the *Railway Age,* June 11, page 1667, this board consists of 30 members of the American Engineering Council. From the report of the committee it was decided that as there were a number of societies which were expected to join shortly, vacancies should be left on the board in order that these societies might be able to secure proper representation. As a result of this decision four vacancies were left for this purpose, and this, plus the six executive officers who are regular members of the board, left 20 places open out of the full number of 30; they were apportioned by assigning 14 places to the national societies and six to local organizations.

Following the method outlined in the societies' constitution the country was divided into six districts for the locals as follows: District 1, New England and New York; District 2, Michigan, Wisconsin and Minnesota; District 3, Ohio, Indiana and Illinois; District 4, New Jersey, Pennsylvania, Delaware, Maryland, and the District of Columbia; District 5, all the southern states including Louisiana and Texas, and District 6, all other states west of the Mississippi river. Of the national societies the American Society of Mechanical Engineers received four places; the American Institute of Mining and Metallurgical Engineers, three; American Institute of Electrical Engineers, four; American Institute of Chemical Engineers, one; American Society of Agricultural Engineers, one, and the Society of Industrial Engineers, one.

The executive officers and the members of the executive board so far as they were elected are: Herbert Hoover, Palo Alto, Cal.; president; Calvert Townley, New York, vice-president; W. E. Rolfe, St. Louis, Mo., vice-president; D. S. Kimball, Ithaca, N. Y., vice-president; J. Parke Channing, New York, vice-president, and L. W. Wallace, Baltimore, Md., treasurer. For the A. S. M. E., L. P. Alford, New York; E. S. Carman, Cleveland, Ohio; A. M. Greene, Jr., Troy, N. Y., and Fred J. Miller, Central Bridge, Pa. For the A. I. E. E., H. W. Buck, New York; Willian McClellan, Philadelphia, Pa.; C. F. Scott, New Haven, Conn., and L. B. Stillwell, New York. For the A. I. M. E., Edwin Ludlow, New York; A. S. Dwight, New York, and Phillip N. Moore, St. Louis, Mo. For the A. I. C. E., T. E. Howe, Washington, D. C., For Districts 4, 5 and 6, W. W. Varney, Baltimore, Md.; O. H. Koch, Dallas, Texas, and L. B. Smith, Topeka, Kan., respectively.

Time Extended for Charter Membership

A resolution was passed which stated in effect that the time for all societies among those originally invited to become charter members would be extended until July 1, 1921, and that a society joining before that limit would become a full charter member. The matter of a permanent location for headquarters proved to be a serious question and was hotly debated. The consensus of opinion was, however, that in order to carry forward the work of public service for which the federation was organized it would be necessary to maintain an office in Washington. As a result it was decided that the headquarters be located in that city after January 1, 1921, and that until that time the society would, through the courtesy of the existing Engineering Council, carry on its work in the Washington office of Engineering Council.

The committee on plan and scope presented a large number of topics of important interest to the public at large and on which the society could well devote its energies. The more important of these included the conservation of labor or the reduction of economic waste, transportation, the establishment of a department of public works, national fire protection, patents, licensing of engineers, education, compensation, service bureau, and numerous others, some of which are now in the hands of Engineering Council, or are under consideration by it. In the main, the committee and the new council attempted to develop and carry on that work which at the present time is of the most vital interest to the nation. It was emphasized that the limiting factor to this work would be the finances of the federation.

The budget committee submitted two estimates based on the maximum and the minimum assumed income. The minimum income was based on the number of societies already members and amounted to $59,000 a year, and the maximum was based upon a reasonable additional number of societies or an income of $80,000 per year. The expenditures were estimated to be $56,500 as a minimum and $92,500 as a maximum. The actual expenditures, it was thought, would be somewhere between these two figures.

In general the work of the new American Engineering Council will be along the lines of existing Engineering Council though it is expected to broaden the scope and to render a service extending over a greater field of activity than has been heretofore attempted. Thus Engineering Council's work will be largely duplicated and for that reason certain tentative measures had been taken to turn over its work to the new federation. The resolution of the American Society of Civil Engineers given elsewhere had the effect of blocking any movement which might have been taken at this meeting toward the immediate turning over of its work to the Federated Societies. This action makes it necessary to refer the matter back to the founder societies for further action and as Engineering Council depends largely upon their appropriations it is thought that it will pass out of existence because of lack of funds.

Of the public service work to be undertaken the reduction of economic waste will probably receive first consideration. Mr. Hoover emphasized this strongly in an address on "Some Phases of Relationship of Engineering Societies to Public Service." An abstract of the address follows:

Reduction of Economic Waste

The greatest of the problems now before the country and, in fact, before the world, are those growing out of our industrial development. The enormous industrial expansion of the last 50 years has lifted the standard of living and comfort beyond any dream of our forefathers.

We have built up our civilization, both political, social and economic, on the foundation of individualism. We have

found in the course of development of large industry upon this system that individual initiative can be destroyed by allowing the concentration of industry and service, and thus an economic domination of groups over the whole. While our present system of individualism under controlled capitalism may not be perfect, the alternative offers nothing that warrants its abandonment. Our thought, therefore, needs to be directed to the improvement of this structure and not to its destruction.

A profound development of our economic system apart from control of capital and service during the last score of years has been the great growth and consolidation of voluntary local and national associations. These associations represent great economic groups of common purpose, and are quite apart from the great voluntary groups created solely for public service. This engineers' association stands somewhat apart among these economic groups in that it has no special economic interest for its members. Its only interest in the creation of a great national association is public service, to give voice to the thought of the engineers in these questions. And if the engineers, with their training in quantitive thought, with their intimate experience in industrial life, can be of service in bringing about co-operation between these great economic groups of special interests, they will have performed an extraordinary service.

We have just passed through a period of unparalleled speculation, extravagance and waste. We shall now not only reap its inevitable harvest of unemployment and readjustment, but we shall feel the real effect of four years of world destruction, and from it economic and social problems will stand out in vivid disputation. One of the greatest conflicts rumbling up in the distance is that between the employer on one side and organized labor on the other. There are certain areas of conflict of interest, but there is between these groups a far greater area of common interest, and if we can find measures by which, through co-operation, the field of common interest could be organized, then the area of conflict could be in the largest degree eliminated.

The American Federation of Labor has publicly stated that it desires the support of the engineering skill of the United States in the development of methods for increasing production, and I believe it is the duty of our body to undertake a constructive consideration of these problems and to give assistance not only to the Federation of Labor but also to the other great economic organizations interested in this problem, such as the Employers' Association and the chambers of commerce.

It is primary to mention the three great wastes in production; first, from intermittent employment; second, from unemployment that arises in shifting of industrial currents, and third from strikes and lockouts. Beyond this elimination of waste there is another field of progress in the adoption of measures for positive increase in production.

In the elimination of the great waste and misery in intermittent employment and unemployment, we need at once coordination in economic groups. For example, in the bituminous coal industry where the bad economic functioning of that industry results in an average of but 180 days' employment per annum, a great measure of solution could be had if a basis of co-operation could be found between the coal operators, the coal miners, the railways and the great consumers. The combined result would be a higher standard of living to the employees, a reduced risk to the operator, a fundamental expansion of economic life by cheaper fuel. With our necessary legislation against combination and the lack of any organizing force to bring about this co-operation. the industry is helpless unless we can develop some method of governmental interest, not in governmental ownership, but in stimulation of co-operation in better organization. In the great field of seasonal and other unemployment, we indeed need an expansion and better organization of our local and federal labor exchanges. The individual worker is helpless to find the contacts necessary to make this seasonal shift unless the machinery for this purpose is provided for him.

In the questions of industrial conflict resulting in lockouts and strikes, one mitigating measure has been agreed upon in principle by all sections of the community. This is collective bargaining, by which, whenever possible, the parties should settle their difficulties before they start a fight. The point where the universal application of collective bargaining has broken down is in the method of its execution. The conflict arises almost wholly over the question of representation and questions of enforcement. The second Industrial Conference proposed a solution to this point by the provision that where there was a conflict over representation the determination should be left to a third and independent party. It also proposed that each party should have the right to summon skill and experience to its assistance. It further proposed that where one of the parties at dispute refuses to enter upon collective bargaining, the entire question should be referred to an independent tribunal for investigation as to the right and wrong of the whole dispute—but only for investigation and report.

There are questions in connection with this entire problem of employer and employee relationship, both in its aspects of increased production and in its aspects of wasteful unemployment, that deserve most careful study by our engineers. There lies at the heart of all these questions the great human conception that this is a community working for the benefit of its human members, not for the benefit of its machines or to aggrandize individuals; that if we would build up character and abilities and standard of living in our people, we must have regard to their leisure for citizenship, for recreation and for family life. These considerations, together with protection against strain, must be the fundamentals of determinations of hours of labor. These factors being first protected, the maximum production of the country should become the dominating purpose.

The precise hours of labor should and will vary with the varying conditions of trades and establishments, but the proper determination of hours, based upon these factors, is an immediate field demanding attention of engineers. There is no greater economic fallacy than the doctrine that the decrease of hours below these primary considerations makes for employment of great numbers, and it is an equal certainty that the 84-hour week of some employments transgresses these fundamentals to a point of inhumanity.

There is a broad question bearing upon stimulation of self-interest and thus increase in production that revolves around the method of wage payment. I need not review to you the advantages, difficulties and weaknesses of bonus, piece work, profit or saving sharing plans that are in use as a remedy for the deadening results of the same wage payment to good and bad skill alike. A suggestion for your consideration is the possible use of another device in encouragement of individual interest and effort by creating two or three levels of wage in agreements for each trade, the position of each man in such scale to be based upon comparative skill and character. This plan should be developed upon the principle of graded extra compensation, for added skill and performance, above an agreed basic wage. In order to give confidence, the classification under such scales must be passed upon by representatives of the workers in such shop or department. This plan is now being successfully experimented with.

We must take account of the tendencies of our present repetitive industries to eliminate the creative instinct in its workers, to narrow their field of craftmanship, and to discard entirely the contribution to industry that could be had from their minds as well as from their hands. There has been a great increase in shop committees as a method to relieve this tendency. Where they have been elected by free

and secret ballot among the workers, where they are dominated by a genuine desire on both sides for mutual co-operation in the shop, they have resulted in great good. Organized labor has opposed some forms of these committees because of the fear that they may break down trade organization covering the area of many different shops.

Again I believe the engineers could assist in the erection of a bridge of co-operation if organized labor, which has already made a beginning, would extend more widely its adoption of the principles of a shop committee settling its problems of wage and conditions of labor in general agreement and applying its energies through shop committee organization to development of production as well as to the correction of incidental grievance. There would be little outcry against the closed shop if it were closed in order to secure unity of purpose in constructive increase of production by offering to the employer the full value of the worker's mind and effort as well as his hands.

While it is easy to state that increased production will decrease cost and by providing a greater demand for goods secure increased consumption and ultimate greater employment, yet the early stages of this process do result in unemployment and great misery. It takes a variable period of time to create the increased area of consumption of cheapened commodities, and in the meantime, when this is translated to the individual worker he sees his particular mate thrown out of employment. We accomplish these results over long periods of time, but if we would secure co-operation to accomplish them rapidly we must take account of this unemployment and we must say to the community that if it is to benefit by the cheapening costs and thus the increased standard of living, or alternatively if the employer is to take the benefits, the entire burden should not be thrust upon the individual who now alone suffers from industrial changes. Nor can this be accomplished except by co-operation between groups.

I am not one of these who anticipates the solution of these things in a day. Durable human progress has not been founded on long strides. But in your position as a party of the third part to many of these conflicting economic groups, with your lifelong training in quantitive thought, with your sole mental aspect of construction, you, the engineers, should be able to make contribution of those safe steps that make for real progress.

Other Matters Before the Board

The question of a permanent executive secretary was left for future consideration. In order to aid in a proper selection a committee of seven members of the executive board, including Herbert Hoover, was selected to look up and report on the name or names of those men best qualified to handle the secretarial work of the council and society.

Arrangements were made for immediate steps in co-operating with Engineering Council, the National Public Works Department Association and others in forwarding the move towards establishing a Department of Public Works. The date of the next meeting was left to the discretion of the president, except that it may not be later than January, 1921.

Upper Berth Best in European Cars.—"You can tell you're back in America," said the traveler, "when you hear people insisting upon getting a lower berth in the sleeper. In Europe what they insist upon is the upper. The upper berth is hung so far down that the lower berth becomes merely a sort of catacomb shelf into which the unfortunate who uses it must insert himself horizontally; whereas in the top berth a man could almost stand up; he has the lights and he controls the ventilator, and in the morning he may sit up in spacious comfort to eat the breakfast of coffee and rolls which the sleeping car attendant serves to him in bed. Don't ever ask for a lower. Go after the upper berth in the foreign sleepers."—*N. Y. Sun.*

Short Line Wage Hearings

Public hearings on the demands of employees of the short lines for the extension to them of the rates of pay granted to employees of trunk lines by the Railroad Labor Board's award of July 20 were re-opened before the Board at Chicago on November 22.

Ben B. Cain, assistant to the president of the American Short Line Railroad Association, presented the short line carrier's side of the case, testifying at both sessions on that date. In general, Mr. Cain opposed the granting of increased wages to short line employees, first, because on the merits of the case alone such action would not be just; second, because of the financial condition of the short lines and the unfortunate results which may accompany such action; and, third, because the short lines are not properly before the Board. Mr. Cain began his presentation by outlining the position of the representatives of the employees as expressed in testimony presented in the hearing culminating in the Board's decision of July 20. This position was that all railroads should be treated alike inasmuch as they are all treated alike by the terms of the Transportation Act. After defining the Association's position in regard to subsidiary lines such as those of the Southern and Seaboard Air Line, which are before the Board in this case, which is briefly that there is no difference between them and other short lines. Mr. Cain refuted the employees' probable contention that the Transportation Act guarantees every railroad six per cent return on the value of the property by quoting and interpreting the rate sections of the act.

In speaking of short lines, Mr. Cain called them "children of transportation," and outlined their importance as feeders to larger systems and as servants of the public. In regard to rates of pay on these lines, Mr. Cain advocated the maintenance of differentials, citing previous testimony of various labor leaders to show that differentials are recognized as necessary even by representatives of the opposing side. Mr. Cain then presented his views on each of six conditions upon which the board's awards should be based under the terms of the Transportation Act. Regarding wages paid in outside industry, he cited rates of pay for street car employees. Their rates are now lower than those now paid on short lines. Regarding the relation of wages to the cost of living, he called attention to the fact that commodity costs are declining rapidly, that living costs are even cheaper in smaller communities where short line employees reside and that therefore the living wage is already below that being paid on short lines. Regarding hazards of employment, he cited the fact that these roads operate usually but one train, largely during the daytime at slow speed with light engines and trains. Furthermore, he said the short line employees have regular hours of work, are usually at home every night and in no way are their hazards comparable with those of employees of larger systems. These factors also apply to the experience and skill required on short lines, he added. In addition, employment is regular because of the fact that a minimum number of trains are being operated and there can be no curtailment. Regarding inequalities in wages, Mr. Cain stated that there could be no uniformity of wage scales for short lines because of their great physical differences.

Upon being questioned, Mr. Cain stated that the application of the consolidation clauses of the Transportation Act would probably overcome this difficulty. Mr. Cain closed his representation with a discussion as to whether short lines are properly before the Board in this case. He called attention to the Board's ruling on the application of the representatives of the "outlaw" switchmen and to the similarity of conditions in the present case to the conditions leading to the issuance of the Board's ruling on the switchmen's petition. The Board adjourned after two sessions on November 22 until November 24.

Operating Statistics for August

The Interstate Commerce Commission has issued a tabular summary of operating statistics for the month of August, 1920, of roads having annual operating revenues in excess of $25,000,000 (including mixed and special train service). The figures per ton miles, car loading and car mileage, and net ton miles per car day are as follows:

		Net ton-miles (millions)		Net ton-miles per loaded freight car-mile		Car-miles per car day		Net ton-miles per car day	
		1920	1919	1920	1919	1920	1919	1920	1919
New England Region—									
Boston & Albany	August	165	123	26.9	22.5	33.2	30.5	616	466
	Eight months	1,086	870	24.8	21.5	26.2	31.5	459	479
Boston & Maine	August	379	306	25.6	23.2	19.5	17.2	359	289
	Eight months	2,555	2,186	24.2	23.8	15.6	17.4	278	303
New York, New Haven & Hartford	August	308	282	24.8	23.0	12.7	13.6	233	232
	Eight months	1,926	2,050	23.3	23.0	9.6	14.1	168	244
Great Lakes Region:									
Delaware & Hudson	August	456	346	36.8	35.4	28.1	28.0	688	627
	Eight months	2,962	2,328	35.1	35.5	26.9	25.3	645	582
Delaware, Lackawanna & Western	August	548	461	29.6	29.2	33.5	31.4	698	668
	Eight months	3,399	3,319	28.8	29.9	27.1	27.0	558	562
Erie (including Chicago & Erie)	August	1,126	1,057	29.1	28.5	26.8	33.6	544	667
	Eight months	7,718	6,775	29.4	28.6	23.4	30.3	494	579
Lehigh Valley	August	706	593	32.9	31.4	26.1	25.7	601	593
	Eight months	4,207	3,730	31.5	30.2	19.9	22.5	447	472
Michigan Central	August	522	430	25.5	20.2	23.6	24.9	439	385
	Eight months	3,307	2,861	24.5	20.7	18.2	26.0	340	380
New York Central	August	2,499	2,122	29.7	26.9	25.3	26.1	499	492
	Eight months	15,949	13,699	28.0	26.1	21.6	23.7	411	406
Pere Marquette	August	275	238	27.2	24.5	17.9	17.4	386	328
	Eight months	1,770	1,633	26.4	24.1	15.1	18.2	311	327
Pittsburgh & Lake Erie	August	262	226	42.8	41.6	9.0	11.8	282	323
	Eight months	1,374	1,445	42.3	40.9	7.5	8.9	217	240
Wabash	August	503	241	25.3	23.9	27.6	17.3	547	329
	Eight months	3,144	2,543	24.9	23.2	25.7	26.4	507	446
Ohio-Indiana-Allegheny Region—									
Baltimore & Ohio	August	2,154	1,837	36.0	32.5	25.8	24.6	607	575
	Eight months	14,058	11,081	34.2	33.4	24.3	22.5	566	484
Central of New Jersey	August	269	237	33.4	32.7	15.7	14.7	342	300
	Eight months	1,721	1,558	33.9	33.0	13.5	13.0	293	265
Cleveland, Cincinnati, Chicago & St. Louis	August	640	648	29.1	27.5	28.8	30.6	562	621
	Eight months	4,498	4,021	28.3	27.6	27.3	26.6	531	500
Pennsylvania System	August	4,928	4,888	36.3	34.2	22.0	21.7	514	505
	Eight months	33,096	31,725	34.0	37.0	18.9	18.9	435	438
Philadelphia & Reading	August	693	651	38.8	37.9	18.0	22.2	483	562
	Eight months	4,669	4,105	38.0	37.7	18.9	18.7	492	465
Pocahontas Region—									
Chesapeake & Ohio	August	1,192	793	42.3	40.8	36.1	23.2	938	563
	Eight months	8,182	6,449	41.0	40.4	36.4	24.3	919	584
Norfolk & Western	August	1,104	984	41.7	39.7	37.1	33.6	996	850
	Eight months	7,608	6,722	41.4	39.6	34.9	27.4	930	676
Southern Region—									
Atlantic Coast Line	August	309	230	23.4	20.6	24.5	16.1	395	255
	Eight months	2,630	2,417	21.2	21.5	22.7	20.5	332	299
Illinois Central (including Yazoo & Mississippi Valley)	August	1,606	1,247	30.4	26.4	42.1	36.3	892	683
	Eight months	11,470	8,622	28.8	26.6	40.4	31.1	800	575
Louisville & Nashville	August	947	796	31.1	29.2	30.0	26.2	629	542
	Eight months	6,636	5,881	29.8	29.0	31.3	24.4	628	486
Seaboard Air Line	August	242	157	24.0	22.1	23.6	18.1	416	314
	Eight months	1,959	1,538	22.9	21.9	21.7	20.0	356	311
Southern Railway	August	804	640	24.1	21.9	25.3	22.3	451	388
	Eight months	6,421	4,587	23.3	22.2	23.1	19.9	403	325
Northwestern Region—									
Chicago & North Western	August	1,073	826	26.5	24.6	24.2	17.1	421	305
	Eight months	7,494	6,470	25.5	24.9	21.1	19.3	369	322
Chicago, Milwaukee & St. Paul	August	1,175	1,132	24.9	23.4	32.9	27.3	537	461
	Eight months	8,742	8,182	25.2	24.7	24.2	26.0	434	450
Chicago, St. Paul, Minneapolis & Omaha	August	173	146	24.0	22.3	25.1	20.0	433	341
	Eight months	1,242	1,054	23.7	23.4	22.2	14.8	396	240
Great Northern	August	883	673	29.9	27.2	31.3	21.7	561	413
	Eight months	6,139	5,580	28.3	28.8	26.4	21.0	529	419
Minneapolis, St. Paul & Sault Ste. Marie	August	302	267	23.0	21.2	29.1	24.3	468	396
	Eight months	2,378	2,051	23.1	22.3	26.6	22.2	475	367
Northern Pacific	August	770	632	26.8	24.6	36.0	29.1	598	493
	Eight months	5,945	5,308	27.2	27.1	33.6	25.1	671	486
Oregon-Washington R.R. & Navigation Co	August	183	173	28.0	25.9	38.5	32.3	826	609
	Eight months	1,430	1,109	28.1	26.2	29.8	25.7	656	514
Central Western Region—									
Atchison, Topeka & Santa Fe	August	1,199	1,130	22.1	21.8	41.6	30.8	627	483
	Eight months	8,611	7,249	22.8	22.1	32.1	26.1	507	407
Chicago & Alton	August	226	151	26.0	24.3	21.6	17.5	387	290
	Eight months	1,558	1,357	27.0	26.0	23.4	22.0	423	361
Chicago, Rock Island & Pacific	August	789	726	25.2	24.4	30.2	21.9	571	411
	Eight months	5,947	4,801	24.1	23.0	25.5	24.5	451	401
Chicago, Burlington & Quincy	August	1,451	1,431	29.1	27.0	34.3	32.6	679	606
	Eight months	10,776	8,931	28.3	26.8	30.4	25.6	603	465
Denver & Rio Grande	August	191	183	29.4	28.3	20.8	17.6	426	314
	Eight months	1,414	1,158	30.3	29.8	19.0	13.2	403	267
Oregon Short Line	August	321	298	28.8	26.8	52.3	41.5	975	776
	Eight months	2,373	1,855	29.6	27.5	46.3	31.3	984	611
Southern Pacific	August	972	791	25.1	24.3	36.6	34.7	676	568
	Eight months	6,729	6,077	25.3	25.7	34.6	32.0	626	567
Union Pacific	August	998	874	23.0	21.8	86.7	65.2	1,373	975
	Eight months	6,237	5,542	24.3	23.8	68.9	54.0	1,249	922
Southwestern Region—									
Missouri, Kansas & Texas	August	225	193	24.6	22.8	31.5	31.4	492	473
	Eight months	1,516	1,317	23.7	23.3	28.2	23.8	414	332
Missouri, Kansas & Texas of Texas	August	133	127	26.5	24.2	19.5	17.2	343	291
	Eight months	899	811	24.3	23.6	16.8	12.7	268	186
Missouri Pacific	August	810	692	27.3	25.8	24.1	24.2	495	446
	Eight months	6,022	4,773	26.8	25.3	22.5	20.5	453	376
St. Louis-San Francisco	August	454	383	26.0	24.5	22.6	17.7	404	314
	Eight months	3,318	2,842	25.8	24.8	20.7	18.3	368	308
Texas & Pacific	August	184	154	24.2	23.1	25.8	19.7	449	327
	Eight months	1,289	1,198	23.3	22.9	21.0	19.7	344	313

Operation of British and U. S. Railways Compared

Detailed Statistics Regarding Results in Both Countries in First Months of 1920 Afford Interesting Material for Comparisons

THE BUREAU of Railway Economics has prepared the following interesting and valuable comparative study of the operating statistics of the railways of Great Britain and the United States for the first six months of 1920:

Operating Statistics—United States and Great Britain Six Months—1920

Among the several provisions in the Act of Parliament of August 13, 1919, creating the British Ministry of Transport, is one which empowers the Minister to require the railways to publish certain railway statistics. As a result of this and other general powers conferred upon the Ministry by the Act, a new system of railway operating statistics was made effective in Great Britain, beginning the first of January, 1920.

The forms and instructions from which the figures have been compiled were prepared by the general managers of the railway companies concerned. Under the new system summaries of the statistics are issued by the Ministry of Transport for each period of four weeks. Their publication marks an important stage of progress relative to railway operation, especially during the period of post-war reconstruction. Three new factors have been introduced, namely: Ton-miles, car-miles, and locomotive hours. In addition, statistics previously ascertained, such as train-miles and locomotive miles, have been more closely analyzed so as to add materially to their value. Results for the first six months of the present year are now available, and the practical value of the new statistics will be greater as figures are added for each succeeding month, and later for two or more years on a comparative basis.

Summarized results for the six months (24 weeks) to June 20, 1920, appear in the accompanying table.

RAILWAYS OF GREAT BRITAIN

OPERATING STATISTSCS FOR SIX MONTHS, JANUARY 1 TO JUNE 20, 1920

Total freight tons	180,738,588
Coal, coke and patent fuel	104,491,295
Other minerals	36,316,487
General merchandise (including live stock)	39,930,806
Total freight—net ton-miles	10,364,679,852
Coal, coke and patent fuel	4,904,380,808
Other minerals	1,847,007,045
General merchandise (including live stock)	3,613,291,999
Average length of haul—all freight-miles	57.35
Coal, coke and patent fuel	46.94
Other minerals	50.86
General merchandise (including live stock)	90.49
Per cent of total freight-tons	100.00
Coal, coke and patent fuel	57.82
Other minerals	20.09
General merchandise (including live stock)	22.09
Per cent of total freight—net ton-miles	100.00
Coal, coke and patent fuel	47.32
Other minerals	17.82
General merchandise (including live stock)	34.86
Freight traffic receipts—gross	$282,974,011
Receipts per ton-mile (including C. & D.)—cents	2.866
Receipts per ton-mile (excluding C. & D.)—cents	2.629
Average train load—tons	150.36
Average car load—tons	6.10
Locomotive-miles	256,343,647
Locomotive-hours—total	37,023,827
In traffic	33,625,039
In other locomotive duties	3,398,788
Car-miles—total	2,388,281,135
Loaded	1,692,150,254
Empty	696,130,881
Percentage of loaded to total	70.85
Cars per train—total	34.68
Loaded	24.57
Empty	10.11
Average miles per car per day (loaded and empty)	10.63
Net ton-miles:	
Per train engine hour	968.00
Per shunting hour	935.69
Per engine hour	475.72
Ton-miles per route mile	515,332
Car-miles per train locomotive-hour	222.93
Car-miles per shunting hour	222.50
Car-miles per locomotive-hour	109.56
Passenger train-miles per train-hour	12.94
Freight train-miles per train-hour	7.61
Passenger train-miles per engine-hour	10.09
Freight train-miles per engine-hour	3.16
Average time per day cars were in transit—hours	1.40
Average time per day cars were being switched or standing waiting repair—hours	22.60

NOTE.—Pounds converted to dollars at 4.8665. Tons are short tons of 2,000 lbs. C. & D. = collection and delivery.

This table provides a basis, for the first time, for a detailed comparison of English and American operating results. A note of caution is necessary against the too hasty attempt to draw conclusions *from the figures merely;* comparisons between different countries, as between different systems in any individual country, should not be made except by those who know and can make allowance for the varying circumstances and conditions affecting the countries concerned.

What the Statistics Show

The average train load in Great Britain for the six months to June 20, 1920, was 150 tons, while that for the United States for the six months to June 30, 1920, was 710 tons. Some critics may say that operating and traffic, as well as geographical conditions in the United States and England, are so different that comparisons of train or car loading are not only useless but absolutely misleading. Yet a direct comparison, designed merely to set out the differences in sharp detail, must have some value, especially when all other factors in the comparison are taken into account. The average freight train load in the United States for the decades since 1888, has been as follows:

Year	United States average freight train load-tons
1888	176
1898	226
1908	352
1918	628
1920 (Six months)	710

The foregoing figures present a luminous historical fact as to increased train loading results attained by the railways of the United States. Every decade from the very first has shown marked advance, with the curious coincidence that in 1888 the average train load in this country was greater than the British average for 1920, while the American *average* for 1888 was almost the same as that for one or two of the individual companies that top the list in England to-day.

To speak of the American train-load of 710 tons is to talk in terms only of an average, and conveys no idea of the size of the heaviest freight trains in this country. It is not exceptional for a locomotive in the United States to haul three or four thousand tons, and in the case of iron ore coming down from the mines at Duluth, engines have handled as much as 7,500 tons of gross load on one train. This may be said to represent the maximum train load in the United States, while in England the heaviest gross train loads run up to 1,500 tons, and these are very exceptional. Both these last figures include weight of cars and therefore are comparable with each other, although not strictly comparable with the average freight train loads referred to above.

Receipts Per Ton-Mile

An important statistical unit in the new English statistics is the average revenue, or receipts, per ton per mile. The average gross receipts per ton mile in England for the month of January, 1920, was 2.328 cents, and was increased to 3.000 cents in the month of June, 1920. This increase was due to the higher level of freight rates made effective on January 15, 1920. The average for the six months ended June,

was 2.866 cents. These averages are gross receipts, and include charges for collection and delivery. Excluding such charges, the average net receipts per ton-mile were as follows: First four weeks (to January 31st), 2.107 cents; second four weeks (February), 2.689 cents; month of June, 2.748 cents; average for six months, 2.629 cents.

The general increase in freight rates, effective January 15, ranged from 25 to 60 per cent, plus a flat rate addition per ton, making an average increase of 55 per cent for the country as a whole. Later, on September 1, 1920, these rates were cancelled and an increase of 100 per cent, plus a flat rate addition per ton, was made on the rates in effect previous to January 14, 1920. This latter increase, of course, plays no part in the average receipts per ton-mile for England discussed above.

The average receipts per ton-mile for Class I roads in the United States, which correspond to the British averages, exclusive of collection and delivery charges, was 0.972 cents for the six months to June 30, 1920. A survey of the average receipts per ton-mile in the United States by decades since 1888 is of interest, as shown by the following table. No allowance is made for the freight rate increase of August, 1920, just as the British increases of September 1, 1920, have not yet been reflected in the operating returns.

Year	United States Average receipts per ton-mile (cents)
1888	1.001
1898	0.753
1906	0.754
1918	0.849
1920 (Six months)	0.972

Average Length of Haul

Any comparison of freight charges in England with those in America would be misleading, unless distances are shown at the same time. The average length of haul for all freight, as revealed by the new statistics in Great Britain for the six months ending June 20, 1920, was 57 miles, while that for general merchandise alone was 91 miles. The average haul for all freight in the United States for the six months ending June 30, 1920, approximated 316 miles. The figures in Great Britain for the six months ending June 20, 1920, are shown as follows:

Traffic	Railways of Great Britain as a whole
General merchandise	91 miles
Coal and coke	46 miles
Other minerals	51 miles
All freight	57 miles

These figures correspond with those in the United States shown below:

Year	Typical haul railways of U. S. regarded as one system
1915	295.90
1916	295.23
1917	312.07
1918	301.47
1920 (Estimated)	316.00

It is readily seen that England is at a disadvantage in having shorter hauling distances than those in the United States. In fact, the average length of haul in England is practically as short as that of any other country in the world. In view of the fact that heavy terminal costs are included as a fixed figure in long and short distance traffic alike, England must either increase her long distance traffic in order to increase her railway revenues, or (barring great development along that line, because of geographical or traffic conditions) reduce terminal costs, if her railway charges per ton mile are to return to anything like pre-war levels.

Freight Car Performance

According to the new statistics, British roads for the six months ending June 20, 1920, hauled a total of 10,364,679,852 tons one mile. Their freight cars ran 2,388,281,135 miles, with an average of 34.68 cars per train. Of these, 34.68 cars, an average of 27.57 were loaded and 10.11 were empty, the proportion of loaded cars per train being 70.8 per cent. In the United States, Class I roads for the six months ending June 30, 1920, hauled 207,281,000,000 tons one mile, with a car performance of 10,305,601,000 car-miles. The average number of cars per train was 36, which is practically the same as in England. Loaded cars per train in the United States were 26 and the empty 10, the percentage of loaded to total being 70.7 per cent, slightly higher than the British figure.

In England, for the six months ending June 20, 1920, the average number of miles per car per day was 10.63 miles. For the six months ending June 30, 1920, in the United States, the number of miles per car per day was 23.

Locomotive Efficiency

Locomotive hours is another of the new factors introduced in the English statistics, and as it is one of the test units of cost in railway operation, it is a most invaluable addition when taken in conjunction with ton-miles. The total number of engine hours in England for the six months ending June 20, 1920, was37,023,827, of which 33,625,039 were expended in moving traffic, and 3,398,788 in other locomotive duties.

During the same period the English freight locomotive hauled on an average, 968 tons each hour in regular traffic, while an average of 936 tons per locomotive was switched each hour. Each hour the average English locomotive moved 110 cars.

British vs. American Results

For the six months ending June 30, 1920, the Class I railroads in the United States carried 189,997,457,000 ton-miles of revenue freight earning $1,847,217,911, with an average receipt per ton-mile of 0.972 cents. According to the new British statistics, the average receipts per ton-mile for the six months ending June 20, 1920, was 2.629 cents. If the average receipts per ton-mile which have been collected by the British railways during this six months period, had been charged against the freight traffic carried by the Class I railways in the United States, for the six months ending June 30, 1920, the latter would have earned $5,445,327,118 instead of $1,847,217,911. In other words, British rates applied to American traffic would have cost the shippers of the United States $3,600,000,000 in six months, or $7,200,000,000 per year, virtually $20,000,000 per day.

The 207,281,000,000 ton-miles, including non-revenue freight, hauled by the Class I railways in the United States for the six months ending June, 1920, were carried by an average train consisting of 36 cars averaging 20 tons each. If the railways in the United States had used British cars, which have an average load of 6 tons, in moving the tonnage quoted above, they would have moved trains consisting of 120 cars, or more than three times the number of cars per train. In view of the present car shortage in the United States, this necessity for more than three times the number of cars for a given amount of traffic, would clearly have tied up our railway traffic in a congestion such as the United States never has experienced, even in its most congested periods.

In hauling the 207,281,000,000 ton-miles of freight during the six months' period, Class I railways in the United States operated 252,540,000 freight train-miles, i. e., in train loads of 710 tons. Applying the British train load of 150 tons to the ton mileage hauled in the United States, the railways in the United States would have been forced to operate 1,195,356,000 train-miles, or nearly five times as many train-miles as the number actually needed under American operating conditions.

The estimated length of haul in the United States, for the six months, was 316 miles. The average length of haul for the British railways for the same period was 57 miles. If

the average haul of the British railways had been in effect in the United States, American freight would have been interchanged 5.54 times as often as it was. The consequent loss in efficiency, increase in cost, and delays in handling the freight business, are almost incalculable.

In other words, if railways in the United States had carried their freight at the rate per mile charged by the British railways, they would have earned $3,600,000,000 more.

If they had been using British freight cars, they would have been forced to use 84 more cars to the train, and the resulting car shortage would have tied them up.

If they had operated with the British train-load, their train-miles would have increased to 473 per cent of the actual number.

If they had hauled their tonnage with the British length of haul, their interchanges would have been increased 5½ times.

National Industrial Traffic League Annual Meeting

Committees Report on 40 Subjects. Attendance of 450 Is Largest in Organization's History

THE ANNUAL MEETING of the National Industrial Traffic League was held at the Waldorf-Astoria Hotel, New York City, on November 18 and 19; W. H. Chandler, of Boston, president of the League, in the chair, and J. H. Beek, executive secretary, acting as secretary of the meeting. About 430 members and guests were in attendance. The membership of the League is now 950 and this was the largest meeting in its history. Veteran members pronounced it the best. More than 40 subjects were on the docket for discussion, some committees reporting on several different matters. Few, if any, of the discussions resulted in any decision affecting the permanent policy of the League, the four sessions being devoted mainly to statements of committee chairmen telling of matters concerning which they are holding conferences, from time to time, with the railroads, or the government, or on which they desired further instructions from the membership. Numerous conferences have been held recently with the railroads and two important ones are scheduled to be held in the next two weeks; one in New York on November 29 and one in Chicago on December 10.

These and other conferences will deal with various proposals of railroads to make advances in freight rates, or to make modifications in tariffs and regulations which will have the effect of producing advances.

The membership of the League is now so large that proposals for action are very numerous and varied. Some of those presented at this convention contemplated action which conservative members held would not come within the provisions of the League constitution and by-laws; and these were referred to the executive committee, with power. Following are notes on the more important matters dealt with:

Increases in freight rates by various devices, changes in classifications, abrogation of commodity rates, etc. The executive committee has appointed a special committee, W. H. Chandler, chairman, to report to the League on this general question, after further conferences with railroad traffic officers.

A special committee made a report on the question of allowances to terminal railroads, including particularly charges for spotting cars on industrial tracks, giving a mass of detailed information on the general subject. The present proposal of the carriers, looking to an increase of their revenue, is not different from one proposed in 1915, and then condemned by the Interstate Commerce Commission. Members are recommended to appeal to the railroads not to abolish free service and to complain to the Interstate Commerce Commission when negotiations fail; and to be prepared to ask legislatures to act when such course is deemed advisable. This committee was instructed to continue its vigorous campaign; and to see that copies of its reports be sent to the Interstate Commerce Commission, to the commissions of the several states and to railroad traffic committees. It was stated that the Southern and the Louisville & Nashville had already given notice of discontinuance of free service at private sidings.

The executive committee proposes to have established a new standing committee, the duty of which will be to keep the public informed on freight rate questions.

A brief report was presented on the clause of the Transportation Act, 1920, providing for consolidation of the railroads into a few systems; and the executive committee proposes to keep a close watch on what the Interstate Commerce Commission does in this connection.

Sidetrack Agreement—The committee on revision of form of contract between railroads and industries, for the construction and operation of sidetracks at industries, reported that the long pending negotiations on this subject had been brought to a final decision; and the proceeding in the matter before the Interstate Commerce Commission had been withdrawn.

Demurrage—The executive committee proposes, in view of the less congested condition of freight yards, to ask the railroads not to increase demurrage charges.

Charges, Regulations and Demurrage on Shipments Reconsigned—The decision on this matter in case No. I. C. C. 10,457 making certain conditions more favorable, applies only in territory east of the Hudson River. The meeting approved the committee's proposal to try to get the order amplified to apply to all territory. The committee thinks that rules for diversion and reconsignment ought to be published by one agent for the whole country, not by each road individually: this ought to tend to promote uniformity of rates. A member suggested, however, that uniformity probably would be accomplished by increasing the rate where it is now $2.50 a car to $3, the latter rate being now in effect in certain territory.

Express Receipts.—The committee on express made a brief report on a proposed combination receipt and way bill, to be filled out by the shipper, which is said to have been adopted by a considerable number of shippers in Chicago; and samples were shown to the members. There is still considerable difference of opinion as to the merits of this form, and the committee proposes to confer further with the express company.

Telegraph Liability—The case involving the intention of the Interstate Commerce Commission to make telegraph companies assume a larger liability for negligence in the transmission of messages is to be argued on December 10 and the League committee will be present at the hearing.

Agency Tariffs—Freight tariffs, issued by agents who act for a number of roads (to save the expense of a large and unnecessary number of individual tariffs) were discussed at some length, many agency tariffs being declared difficult of interpretation. The Interstate Commerce Commission is

contemplating the issuance of drastic rules to cure the faults complained of. It was recommended that all members should promptly report faults to the issuing agent and to the committee.

Diversion and Reconsignment of Perishable Freight.—The committee on perishable freight reported that the Philadelphia & Reading had given notice of cancellation of tariffs allowing transit and storage facilities on fruits and vegetables. It was said that the other roads propose similar action, withdrawing privileges now enjoyed by shippers. It was proposed that the League should intervene before the Interstate Commerce Commission in the protest against the change; but this was objected to on the ground that it has never been the policy of the League to take part in issues of such a local character. On the other hand, it was claimed that the threatened abolition of stop-off privileges would make disturbance in all parts of the country. The matter was finally referred to the executive committee with the recommendation that it be put in the hands of a special committee to confer with the railroads.

Bills before Congress—The legislative committee reported that bills now before Congress in which the League is interested will probably have to be reintroduced in the next Congress, as there is little prospect of any action being taken in the remaining short session of the present Congress. These bills are S. B. 4,204, Interference with Commerce; S. B. 1,024, Commercial Bribery; S. B. 4,254, Lake and Rail Service on the Great Lakes; H. B. 12,953, Withdrawal of Water Transportation Service; S. B. 4,336, Liability of Telegraph Companies.

As to bill S. B. 1,024 the committee is not agreed as to what ought to be done. The re-enactment of the Smith Amendment to the 15th section, which expired by limitation on January 1, 1920, has been discussed by the committee, but no conclusion has been reached.

Freight Claims—The committee on this subject is to have a conference with officers of the freight claim association of the railroads at Chicago on December 7. It is proposed to ask for a rule under which a railroad shall pay interest on claims for loss and damage if not paid within 60 days from the date of filing the claim.

Weighing—The committee on weighing proposes that there shall be no tolerance on coal and coke except by actual weight and tests. This committee will confer with the railroads with a view to promoting better practice in securing actual weights of carload freight.

Export Bill of Lading—The committee in charge of this matter has formulated a blank which will be laid before the Interstate Commerce Commission at its next hearing concerning the bill. It is expected that the arguments for and against the League's form will be all in the hands of the Interstate Commerce Commission by January 1, and that by March 1, a decision from the Commission may be expected. Thereafter it is hoped that the Commission will promptly promulgate form for a domestic bill of lading. The only difference of consequence between the League and the ocean carriers is in regard to the limit of liability, which the carriers desire to continue at $100 a package; the League wants to make this $250.

Shippers' Names on Cars—A special committee, considering complaints of detention of carload freight because of billing being lost, has considered a rule providing for putting a card on the inside of a car showing the name of shipper, name of consignee, etc. One road asks shippers to put in such a card. There are, however, obvious objections to making names public in this way, and the committee has had only one definite complaint of delay due to lost billing. The only action taken was to instruct the committee to keep watch of the situation.

Embargoes—A committee reported proposing action to secure various changes in railroad practice. It is desired to have names of embargo agents published in the Official Guide. The Guide is accessible to many persons who do not have the publication in which the names of embargo agents are now given. Among the other rules desired is one providing that before an embargo is placed, the shipper shall be notified, and one to facilitate the securing of information by shippers from the embargo agents. This committee desires to confer further with the railroads, and the report was received with that understanding.

Telegraph Code—A conference has been held with the Telegraph and Telephone Section of the American Railway Association and further conferences are to be held. It is proposed to formulate a brief cipher code, to be put in the hands of the more important railroad offices. The question of a longer code, or of putting any code in the hands of all local agents, is one requiring further consideration.

Mileage Books—The committee reported a strong demand for a general interchangeable mileage ticket. The committee expects soon to confer further with the railroads, and it proposes to ask for a reduction of 20 per cent in the prices of mileage tickets.

Coal Traffic—The American Wholesale Coal Dealers' Association is conferring with the American Railway Association on the revision of the reconsignment rules affecting coal, and there was a lively discussion as to whether the League could legitimately comply with the request that it support the coal men. Views both for and against were vigorously supported. The matter was finally referred to the executive committee. Similar action was taken concerning the plea made in behalf of the grain shippers in Oklahoma, Kansas, Missouri and elsewhere concerning alleged exorbitant rents asked by railroads for land and shipping station privileges.

Election

J. C. Lincoln, of New York, one of the pioneers in the League, was elected an honorary life member.

The election of officers for the ensuing year resulted in the choice of W. H. Chandler, Boston, as president; Charles Rippin of St. Louis, vice-president; E. C. Wilmore, Chicago, treasurer, and the following officers and directors to represent districts: Honorary vice-presidents, for the seven districts, the following (the name of the district being shown, in each case, in italics). *New England,* W. H. Day, Jr., Lynn, Mass.; *Trunk Line,* R. J. Menzies, New York, N. Y.; *Central Freight Association,* F. H. Baer, Cleveland, O.; *Southeastern,* M. M. Caskie, Montgomery, Ala.; *Southwestern* H. D. Driscoll, Oklahoma City, Okla.; *Western Trunk Line,* C. E. Childe, Omaha, Neb.; *Pacific Coast,* Seth Mann, San Francisco, Cal.

Members of the Board of Directors, to represent the several regions (as indicated in italics), the following: *New England,* C. B. Baldwin, Boston, Mass.; R. W. Poteet, New Britain, Conn.; R. L. French, Bridgeport, Conn.; *Southeastern,* C. S. Hoskins, Tampa, Fla.; J. S. Davant, Memphis, Tenn.; W. S. Creighton, Charlotte, N. C.; *Southwestern,* C. D. Mowen, Ft. Smith, Ark.; U. S. Pawkett, San Antonio, Tex.; C. Giessow, New Orleans, La.; *Pacific Coast and Intermountain,* Seth Mann, San Francisco, Cal.; F. P. Gregson, Los Angeles, Cal.; J. D. Mansfield, Seattle, Wash.; C. O. Borgan, Spokane, Wash.; *Western Trunk Line Northwest,* H. Mueller, St. Paul, Minn.; F. D. Keiser, Duluth, Minn.; M. H. Strothman, Minneapolis, Minn.; *Western Trunk Line West,* Charles Rippin, St. Louis, Mo.; G. M. Cummins, Davenport, Ia.; J. P. Haynes, Sioux City, Ia.; C. E. Childe, Omaha, Neb.; J. H. Tedrew, Kansas City, Mo.; *Central Freight Association,* H. D. Rhodehouse, Youngstown, O.; J. C. Graham, Jackson, Mich.; H. C. Barlow, Chicago, Ill.; F. T. Bentley, Chicago, Ill.; F. M. Renshaw, Cincinnati, O.; *Trunk Line,* W. J. L. Banham, New York, N. Y.; George P. Wilson, Philadelphia, Pa.; F. E. Williamson, Buffalo, N. Y.; J. M. Belleville, Pittsburgh, Pa.

New England Roads Ask Larger Divisions

Trunk Lines Object to Giving Up Revenues to Help Neighbors. Committee Appointed to Seek Agreement

WASHINGTON, D. C.

THE FINANCIAL CONDITION of the New England railroads and the question as to whether their revenues should be increased by allowing them larger divisions of the through rates into and out of New England was the subject of an informal conference before the Interstate Commerce Commission at Washington on November 22, attended by executives of the eastern trunk lines and the New England lines and shippers and state commissioners of New England, who had been called together by the commission for the purpose of discussing the possibility of a voluntary adjustment by the railroads themselves which might make it unnecessary for the commission to determine the divisions in the case instituted by the formal complaint filed by the New England roads. The trunk line executives vigorously opposed the idea of increasing the revenues of the New England lines at their expense, which was the plan favored by the New England interests, but after an all-day discussion an executive session of the railroad officers was held at which a committee of 11 was appointed to endeavor to work out a solution of the problem if possible.

In opening the conference Chairman Clark of the commission said that the New England roads seem to be faced with a serious situation; that they had asked to be treated as a separate group for the purpose of the general rate case but that the commission had suggested that consideration be given to the divisions of joint rates accruing to those lines. The New England lines had filed a complaint asking the commission to fix the divisions, but the commission had called the conference with the thought that an exchange of ideas might pave the way for an understanding and lead to results more satisfactory and lasting than could be reached by a formal proceeding. Mr. Clark suggested that the speakers consider that they were addressing their remarks to each other rather than to the commission.

The position of the New England lines was outlined in a statement by Charles F. Choate, Jr., in part as follows:

The Desperate Condition of the New England Carriers

"The condition of the New England railroads, through the operation of causes entirely beyond their control, has become such that unless immediate relief is afforded, all or most of them will very shortly be driven into receiverships. The net railway operating income of these roads, omitting the Boston & Albany, for the test period averaged $35,175,077, and for the fiscal year ending June 30, 1917, was $42,170,828. During the test period these roads earned a net income after the payment of all fixed charges of over $9,000,000 per year. For the entire 26 months of federal control their net railway operating income was $9,676,535, or an annual average of $4,477,989. For the eight months ending August 31, 1920, the actual deficit in net railway operating income was $23,674,676.

"The best estimate obtainable based on the year ending June 30, 1920, which has been adjusted to reflect the increases of revenue under *Ex Parte* 74 and all wage increases and other increased costs, and predicated on a continuation of present volume of business and operating costs shows for 1921 a net railway operating income of about $10,000,000, or $40,000,000 less than the net railway operating income required by the Transportation Act to show 6 per cent on the fair value of their property, and about $22,000,000 less than the amount required to meet fixed charges. This estimate is generally confirmed by the actual results for September and estimates for October, the only figures available which in any way reflect the operation of the increased rates.

"The book cost of road and equipment as shown by property accounts of the New England Roads, excluding Boston & Albany, exceeds $838,247,769. An annual return of 6 per cent on this amount would require $50,296,485. The preliminary figures informally served on the carriers by the Bureau of Valuation indicate a reproduction cost of over $200,000,000 in excess of book cost.

"The fixed charges of the New England roads as of August, 1920, are $37,641,465, against which there is available non-operating income of $5,853,404, leaving what may be called 'net' fixed charges of $31,788,061, or nearly $22,000,000 in excess of their net railway operating income.

"The high cost of operation in New England, due to short hauls, branch lines, frequency of junction points, density of freight stations, diffusion of traffic and the terminal character of New England railroad service, has been still further exaggerated by the increased costs in all departments and by steadily increasing taxes.

"The increase in fuel cost has been very much greater in New England than in territory west of the Hudson, both because of the restriction of water transportation and because of the higher rates paid railroads outside New England for transporting it. The increased cost of fuel of 1920 over 1919 has been $13,000,000. The increased cost of fuel of 1920 over 1916 has been $25,000,000.

"The increase in wages has also been greater in New England, because the scale of wages of the roads in northern New England was considerably lower than west of the Hudson, with the result that the standardization of wages has imposed an excessively heavy financial burden on the New England carriers. The payroll of New England roads has increased over $100,000,000 per annum since the test period.

"Rate advances increasing the gross revenues of roads operating in Maine have added heavily to the taxes, as in that state a tax is levied as an excise on gross revenue. Per diem, already a heavy burden to New England roads, will as a result of the increased daily rates add a burden of $2,000,000 to $3,000,000 over 1917 charges, and probably considerably more than that. In reality this charge is a transfer of a large sum from New England carriers to Western carriers, based upon transportation conditions entirely beyond the control of New England lines.

"The New England roads are essential to the community which they serve. It is largely an industrial community. The population of the New England states according to the latest census is 7,400,856, which is almost wholly dependent on these industries.

"Not only is no money available for vitally necessary improvements and additions to handle a volume of traffic amounting in 1919 to 72,000,000 tons, but the deficit shown above is so great that these roads can see no escape from their present predicament unless the relief prayed for in the petition be granted.

"Through the inclusion in the Eastern rate group of the investment accounts and revenue needs of the New England roads there was added to the revenue of the C. F. A. and trunk line roads, produced by the increased rates granted, approximately $25,000,000 which would not have been realized had the revenue needs and the property investment of the New England roads not been included. And this $25,000,000 is in excess of the revenue which was needed by the C. F. A. and trunk lines to produce 6 per cent upon their investment.

"In other words, the lines needing the revenue have by

their inclusion in the group lost, and the lines not needing the revenue have gained the $25,000,000.

"From the increased freight rates granted August, 1920, the trunk lines and C. F. A. lines, whose traffic is roughly ¾ freight, profit much more than the New England lines, whose traffic is about ⅓ passenger. In other words, the former lines gain 40 per cent on ¾ of their business, the latter on only about 2/3.

"It was highly desirable that the New England lines should be included in the Eastern rate group to avoid an objectionable and discriminatory rate situation in the whole of official classification territory. The needs of the New England lines represented in the original request to the commission for 30 per cent amounted to an increase in freight revenue for New England carriers of 47-plus per cent, of the C. F. A. lines 24-plus per cent, and of the trunk lines 29-plus per cent. The wage award required an additional 10 per cent., so that the New England carriers needed an increase of 57-plus per cent, whereas they received but 40 per cent.

"Approximately 34,000,000 tons of freight are interchanged between the New England lines, excluding the Boston & Albany, and the lines west of the Hudson. As to this entire volume the New England roads are either originating or delivering carriers. This tonnage produced a gross revenue in 1919 of $124,000,000 for the roads west of the Hudson. The same tonnage at the increased rates should produce nearly $175,000,000 for 1921. In this traffic and the territory which produces or absorbs it, the lines west of the Hudson are as vitally interested as the New England roads, and their revenue from it is 100 per cent in excess of the revenue accruing from it to the New England roads. If this traffic is to be preserved—and it must be preserved—the roads which serve the New England territory must be allowed to live and the industries within that territory must be accorded adequate transportation.

"The commission, as a part of the financial plan upon which the Transportation Act is based, is given the power to divide joint rates so that they shall be just, reasonable and equitable as between the several carriers, giving due consideration, among other things, to the amount of revenue required to pay their respective operating expenses, taxes and a fair return on their railway property held for and used in the service of transportation, and the importance to the public of the transportation service of the carriers, and also whether any particular carrier is an originating, intermediate or delivering line, and any other fact or circumstance which would ordinarily, without regard to the mileage haul, entitle one carrier to a greater or less proportion than another carrier, of the joint rate.

"It seems that the commission, of its own motion, could, in the rate case, have so adjusted the divisions here in question as to be equitable in the light of the foregoing provisions and enable the New England lines to survive and render the service their territory requires. For adjustment of divisions is an integral part of the financial plan devised by Congress.

"So now the commission may adjust these divisions to accomplish this necessary equitable result. Of the $40,000,000 additional net income needed by the New England roads a portion should come from readjusted divisions.

"The action taken by the New England carriers is responsive to the suggestion of the commission in its Report in *Ex Parte* 74, where the commission said (p. 247):

> While the New England carriers are included in the Eastern group and are subject to the percentage for that group, the evidence as to the disproportionate needs of the New England lines makes it desirable that the carriers give careful consideration to the divisions of joint rates accruing to these lines.

"The form of relief suggested is an increase in the New England roads' proportion of through rates which will yield an amount equivalent to the amount which has accrued to the C. F. A. and trunk lines from the rate increases allowed in *Ex Parte* 74 as a result of an inclusion of the New England roads in the Eastern group.

"The New England roads submit that a reasonable arbitrary charge adjusted to the various kinds of commodities transported should be deducted from the joint rates, so that such charge shall yield to the New England lines a net increase in addition to their present divisions upon—

low grade traffic such as coal, iron ore, clay, sand or gravel,	1¾c. per 100 lb.
grain and grain products, forest products, other mill products, pig iron, bloom and brick,	2½c. per 100 lb.
all other freight traffic,	5½c. per 100 lb.

"These unit figures should be translated after careful computation into figures which when applied before prorating will yield the same net result.

"It is believed the New England roads, exclusive of the Boston & Albany, might receive about $24,000,000 from such readjustment, but the figures given are subject to revision after careful analysis of the tonnage in each group, and such revision should be retroactive. These arbitraries will fall far short of meeting the full financial needs of the New England railroads.

"While the Boston & Albany is not included—being a part of the New York Central—it is represented that to avoid discrimination any arbitrary allowed the other New England lines must necessarily apply to the Boston & Albany.

"In submitting this proposition, the New England lines have not omitted to consider what additional revenue may be obtained from adjustments of local and interline rates within their own territory. They have never been able to obtain the full benefit of the Anderson scale—the rates being depressed by the "hold-down" of certain overhead rates and the prohibition of the Fourth Section of the Commerce Act.

"They are ready to co-operate with the trunk lines in adjustment of any commodity rates and reclassifications which will not result in discriminating conditions adversely affecting New England industries.

"But from these various sources the New England roads could not expect to increase their gross revenue more than $3,000,000. At the same time such increases would increase trunk line revenues in much greater proportion.

"In the huge volume of traffic exchanged between lines in trunk line and C. F. A. territory, readjustment of divisions may be so made as to make equitable the situation of those trunk lines which are themselves not earning an adequate return on their investment. Though it should not be forgotten that whatever their situation now they are better off than if the New England lines had not been included in their rate group, because their freight revenues as a whole have been increased 1.48 per cent more than they otherwise would have been. If the $25,000,000 is restored to New England roads, the intention of the framers of the Transportation Act may be carried out and their purpose effectuated. Otherwise the act at the first and crucial test of its efficacy will be proved a failure.

"It was plainly the intent of Congress that our great transportation systems should be nourished rather than starved, and that there should be no large and important group of railroads failing to earn a fair return on the fair value of their property. Congress left to the commission the working out of the intended result, and vested adequate powers in the commission to attain it.

"If within 12 months of its passage it is found that an important group of railroads, whose income has been regulated and wage rate determined by government instrumen-

talities and which are necessary to one of the richest industrial sections of the country, cannot earn interest on their bonded debt and government loans, then the Transportation Act is unworkable.

"Sound financial health for all essential parts of the national rail transportation agency is the central purpose and intent of the new Transportation Act. In this it is in striking contrast with all preceding legislation. The commission was by the new act required to impose rates sufficient to nourish adequately all essential parts of the system and, by fixing through rate divisions and other devices, invested with powers to allocate revenue where needed in order to maintain and develop the transportation system.

"But unless speedy relief is afforded through the only device now available for this situation to the New England lines, financial death, instead of sound financial health, is the certain result.

"Plainly, it is the duty of the representatives of the New England lines to bring this situation promptly to the attention of the commission as well as to the representatives of the lines west. If the act cannot be administered to prevent the results now threatening, it is an obvious failure.

"Such failure will ultimately be as serious for the respondents as for the complainants."

R. T. Higgins, chairman of the Connecticut commission, urged that the Interstate Commerce Commission exercise its power summarily to afford relief to the New England lines, saying that the New England industries should not be penalized by further increases in rates but that the through rates should be divided more equitably. If this cannot be done at once the commission should ask the trunk line executives to agree to a temporary adjustment. H. C. Attwill, chairman of the Massachusetts commission, expressed similar views. A Rhode Island commissioner said that the Interstate Commerce Commission had determined the gross amount of increased revenues necessary for the eastern group of railroads and that now it seems strange that the railroads cannot arrive at at least a tentative agreement. If they cannot do so, he said, the Interstate Commerce Commission should act promptly. B. F. Cleaves, chairman of the Maine commission, said that neither Maine nor the Maine railroads desire to ask for charity or any gift but take the position that the increase in revenues already allowed by the commission should be distributed more equitably.

W. A. Dutton, chairman of the Vermont commission, said the New England roads are facing bankruptcy, but the state commissions can do no more and the Interstate Commerce Commission ought to use its power to remedy the situation. He said all the New England states have allowed intrastate rate increases corresponding to the interstate increases, but a further advance in rates ought not be considered.

E. K. Hubbard, president of the Manufacturers' Association of Connecticut, and James Q. Gulnac, representing various business men's organizations of Maine, spoke from the shippers' standpoint regarding the need for better railroad facilities in New England and the need of the roads for more money to provide additional facilities. They urged that the trunk lines voluntarily give the New England lines larger divisions without requiring the Interstate Commerce Commission to act.

Bird M. Robinson, president of the American Short Line Railroad Association, and a representative of the Denver & Salt Lake, objected to any plan which would take too much money from the trunk lines before the claims of the short lines for better divisions are taken into consideration. Mr. Robinson said he spoke for 186 short lines that are defendants to the complaint filed by the New England roads, and while they would not oppose a temporary adjustment he wanted it understood that if the case comes to a formal proceeding the short lines will ask to be heard in each case. He said the clause in the act authorizing the Interstate Commerce Commission to fix divisions was put there at the request of the short lines and that if they are not able to earn a fair return they are entitled to go to the commission and ask relief. He thought, however, it is incumbent upon the connecting lines to do something for the New England lines by adjustment. Mr. Robinson said that his association had just completed an organization to endeavor to work out a more equitable adjustment of divisions with the Association of Railway Executives.

Daniel Willard, president of the Baltimore & Ohio, said the trunk lines had reached no agreement among themselves, but at an informal conference the day before it had seemed to some of the trunk line executives that the difficulty of the New England lines must rest largely with New England for solution, because their local rates are lower than those west of the Hudson and their divisions are already larger than similar divisions anywhere else. He denied that the trunk lines had received from the rate increase $25,000,000 more than they needed because of the inclusion of the New England lines in the eastern rate district because, he said, they got less than they asked for and on a large amount of interterritorial traffic the increase is only 33 1/3 per cent instead of 40. The problem is not a simple one, he said, and he had no idea that the trunk lines would do but they would be glad to meet and see if a plan of adjustment can be worked out.

However, Mr. Willard said, if the trunk lines are to be expected to give up an unduly large part of their earnings for the benefit of New England they will want to discuss the question of efficiency and to know how the money is to be used. He believed that New England roads are giving local service at rates that are not compensatory. The Anderson scale was made subject to so many exceptions that it does not apply generally and a very large volume of local business moves on low commodity rates.

Mr. Willard said that the position taken at the conference of trunk line representatives would be stated by R. C. Wright, general traffic manager of the Pennsylvania, who made the following statement:

Position of Trunk Line Roads

"The New England carriers claim, in support of their demand for increased revenue, that unless increased revenue is provided their net railway operating income will be approximately $36,000,000 less than a 6 per cent return on their aggregate property investment accounts, and approximately $18,000,000 less than the amount necessary to meet their fixed charges.

"It is submitted that up to this time it is impossible to estimate the results either for roads, for groups of roads, or for territories from the increases under *Ex Parte* 74, as so many factors have arisen which affect the resultant revenues and expenses that no reliable figures are as yet available.

"Moreover, experience is limited to the month of September, which month is well known not to have fully represented the effect of the rate and fare increases, and the accounts for which month include many adjustments and lap-overs, incident to the guaranty period. It is our opinion, therefore, that the figure of $18,000,000, which we understand is presented by the New England roads as the necessary additional amount to cover the interest on their funded debt, cannot be considered accurate or as representing the actual needs, if any, for that purpose.

"Moreover, this committee is of the opinion that certain situations in New England have contributed largely to the alleged need for financial assistance and should be carefully considered in determining what, if any, assistance is required from the lines west of New England, namely:

A. The fact that the expenses of the New England lines have been largely increased by the peculiar fuel coal situa-

tion recently existing, it being our information that this year a very large tonnage of coal was purchased by New England lines in the open market, at prices somewhere near $6.00 per ton more than the contract price, resulting in a very large increase in expenses which is not likely to continue, or occur again;

B. The probability that with the increase in ocean tonnage the water rate from Hampton Roads to New England will be materially reduced, thus decreasing the cost of fuel coal from that territory;

C. The fact that the New England roads participate in all rail differential routes to the west, some of which are circuitous, thereby depleting their revenues;

D. The existence in New England of commodity rates for the transportation of various classes of traffic, which in other territories move generally under class rates;

E. The continuance on the part of New England lines of water competitive rates, when the water competition has for some time been non-existent;

F. The extension of the New York westbound rate to apply all the way from Bangor, Maine, and the blanketing of the eastbound rates from western territory to the whole New England territory on the Boston basis extending as far east as Bangor, Me.;

G. The failure up to date of the New England lines to secure the benefit of the Anderson scale of class rates, because of the rate adjustment just beyond the gateways;

H. The detention of cars in New England resulting in heavy per diem balances.

"Your committee is of the opinion that all of these matters should be fully considered before the final needs of the New England roads in the matter of assistance are determined.

"A study of the divisions in effect between trunk line carriers and New England show that the present divisions to the New England roads are more than equitable, for the following reasons:

A. They exceed divisions which might be worked out on a straight mileage basis;

B. They exceed divisions which might be worked out on a basis of 50 mile blocks with 50 miles for each terminal line;

C. They exceed a rate pro rate division. An analysis of traffic between trunk line territory and New England territory shows that the trunk lines receive divisions equal to 55 per cent of their local rate while the New England roads receive divisions equal to 60 per cent of their local rate; and, indeed, if comparable mileages are taken in trunk line and New England territories, it shows that the trunk lines receive only 51 per cent of their local rate, while the New England roads receive 66 per cent of their local rate. As a result of the present divisions, statistics show that the New England lines enjoy an interchange traffic a ton mile revenue 50 per cent greater than that of the lines in Trunk Line Territory, and that for similar mileage hauls they secure on an average 30 per cent in excess of the ton mile revenues of the lines west of the Hudson river.

"The favorable result of the present divisions to the New England lines arises from the following situation:

A. By the grouping of their stations into large groups for division purposes, thereby securing more than an actual mileage pro rate on short haul traffic;

B. By the use of constructive distance in excess of actual distance between junction points and the furtherest point in each group;

C. By taking terminal deductions from joint rates before prorating, which are not allowed to the terminal carriers west of the Hudson river."

L. F. Loree, president of the Delaware & Hudson, expressed the opinion that the question should be settled by the orderly process of a proceeding before the commission. He read an opinion of counsel that the commission could no more compel a road to give a competitor an increased division, merely because it needed the money and without reference to the factors which should determine the proportion of division, than it could compel it to give up its money directly to another. Mr. Loree also said that conditions are not encouraging, and he estimated that on the basis of the results for September and October the Delaware & Hudson would earn less in a year than it did in the test period. The stock market quotations, he said, indicate that a freight traffic for next year 10 per cent less than for this year has been discounted. The trunk lines are faced with a very difficult situation, he said, and he saw no way in which money can be taken from the Delaware & Hudson and given to New England. He had asked a number of people on whose judgment he relies as to whether it would be worse for the general credit situation for the New England roads to go into bankruptcy or for the trunk lines to pass their dividends and they had replied that the latter would be the more serious. He expressed the opinion that it will be necessary for the railroads to "clean up" the employee system, because they are "loaded up with too many men," and said that much has been done in the way of increasing car mileage and car loading, but the shippers ought to do more in the way of increasing their own facilities. Mr. Loree also asked why it is necessary for the New England people to "ride around so much" as is indicated by the fact that 32 per cent of the earnings of the New England roads are from passenger business as against only 14 per cent for the trunk line roads.

Samuel Rea, president of the Pennsylvania, said his company has interests in and is sympathetic toward New England, but he had not been able to convince himself that the trunk lines could do much to ameliorate the New England situation. He said the divisions are not only fair but liberal to the New England roads. He also pointed out that there is no fund to divide, only an estimate of earnings based on last year's traffic. With the present outlook the result may be very different. Next year will unquestionably be the test year under the transportation act and some roads may have to go down. If they now try to help New England the trouble may be more widespread than if concentrated in New England.

F. H. Alfred, president of the Pere Marquette, said that the September earnings as published in the *Railway Age* indicate a less favorable showing for the trunk lines than for the New England lines and that the Pere Marquette is earning even less than the New England lines.

Mr. Choate said that while it is true that the New England roads receive divisions larger than are allowed in some parts of the country, they are not large in view of the conditions and the cost of operation in New England.

At the conclusion of the conference Chairman Clark said that the first year of the operation of the transportation act would naturally bring many complications which would require time to work out, but he pointed out that the law represented a new attitude of the public to the railroads and a new relation of the railroads to the public, and he suggested that the railroad executives hold a meeting to see if some solution cannot be found. He said the commission has no view as to this controversy, but hoped the executives could find a solution and it would be glad to aid in any way possible. Mr. Willard replied that the executives would hold a meeting but he was not sanguine as to the result.

The railroad officers then went into executive session and after about an hour's discussion agreed upon the appointment of a committee representing the Central Freight Association, Trunk Line and New England roads and the short lines, to endeavor to find a solution. The committee consists of: Samuel Rea, president, Pennsylvania; F. D. Underwood, president, Erie; A. H. Smith, president, New York Central; W. H. Truesdale, president, Delaware, Lackawanna & Western; W. H. Williams, chairman, Wabash; W. M. Duncan, president, Wheeling & Lake Erie; E. J. Pearson, president, New York, New Haven & Hartford; Morris McDonald,

president, Maine Central; J. H. Hustis, president, Boston & Maine; F. H. Alfred, president, Pere Marquette, and Bird M. Robinson, president, American Short Line Railroad Association.

Hearing on Proposed Capitalization of Burlington Surplus

WASHINGTON, D. C.

A HEARING on the application of the Chicago, Burlington & Quincy for authority to issue $60,000,000 of additional capital stock, to be distributed to its stockholders, and $109,000,000 of first and refunding mortgage bonds under a new mortgage, was held before W. A. Colston, director of the Bureau of Finance of the Interstate Commerce Commission at Washington, beginning on November 22. Hale Holden, president of the Burlington, testified that the company proposed to sell $80,000,000 of the bonds to reimburse the treasury for expenditures made from earnings and that unless unforeseen circumstances develop it will probably declare a cash dividend out of the proceeds. The balance of $29,000,000 is to be held for future expenditures. The plan proposed would capitalize $140,000,000 of the company's surplus, which amounts to about $240,000,000.

Mr. Holden outlined the history of the road's financial and physical development, explaining how expenditures had been made largely from earnings to increase the efficiency of the railroad and increase its earning power. The present capitalization is $284,000,000, or $31,836 per mile. Mr. Holden said the company should have a more flexible mortgage and a broader stock base and that the stockholders should receive something in return for their sacrifice of earnings used for improvements. It is compatible with the public interest, he said, that the company's capitalization should more nearly correspond to its value and the proposed dividend would tend to encourage future sales of stock by sound companies for capital purposes. If legitimate rewards of this character are not permitted, he said, it will be necessary to distribute earnings currently. The proposed issue is to be dated February 1, 1921, and to mature in 50 years unless redeemed earlier. It is in the plans of the company, when money conditions permit, to refund its underlying bonds by the use of bonds under the new mortgage, and $261,000,000 will be available under the mortgage for future financing. This, Mr. Holden said, should cover the needs of the company probably for 20 years, especially if it is later able to sell stock for part of its requirements. The company has invested out of earnings more than the amount of the proposed issue and will still have a good surplus reserve. Since 1901 it has invested in additions and betterments $200,099,975, practically all of which has been for the intensive development of the existing facilities—"to make a better machine."

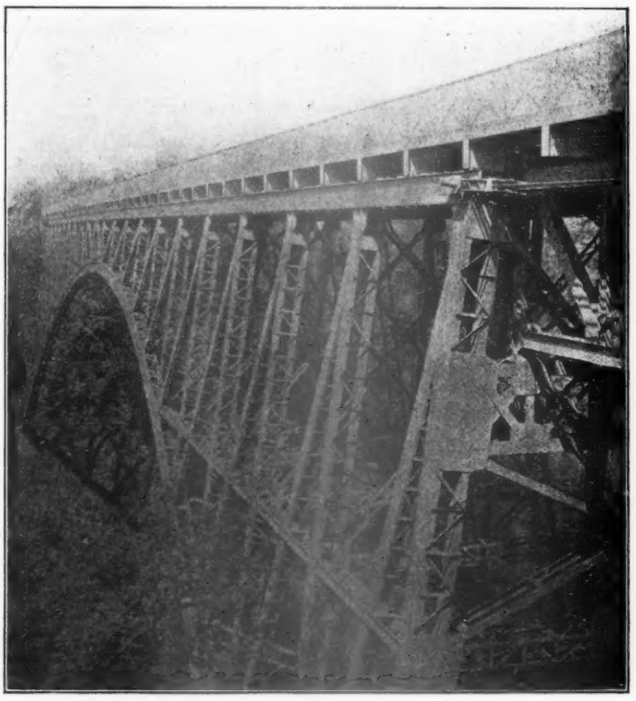
In reply to one of a long series of questions propounded by the Bureau of Finance, Mr. Holden said that practically all of this represented revenue-producing property, because even the expensive track elevation work at Chicago and Aurora had resulted in a saving in operation by eliminating causes of delay.

For the purpose of furnishing the commission with evidence as to the value of its property, Mr. Holden presented a calculation based on average figures applied to other roads in its territory by the Bureau of Valuation of the Interstate Commerce Commission and applied to its inventory. This valuation, he said, does not represent the company's claim as to its value, but a conservative minimum estimate of what the Interstate Commerce Commission valuation will show. On December 31, 1919, the investment in road and equipment, as shown on the company's books, was at the rate of $55,050 per mile, whereas its cost of reproduction new as of its valuation date, June 31, 1917, plus the naked land value, was estimated at $64,300 a mile. Mr. Holden described in detail the methods by which this estimate was arrived at. He said that the Burlington officers would not like to believe that the road is worth only $572,000,000, but thought that these figures demonstrated conclusively that its book value is substantially less than its present value.

Director Colston called attention to a letter addressed to the commission by the Farmers' National Council, asking that the company's application be denied, on the ground that it proposed to capitalize an increase of land value. The letter referred to the opinion of Commissioner Franklin K. Lane in the 1911 rate case, in which he referred to an increase in the Burlington's land value of $150,000,000. Mr. Holden pointed out that the company is not seeking to capitalize any appreciation of growth in the value of any of its property, but is asking authority to issue securities against only a part of the "hard, round, iron dollars" that have been invested in its property out of earnings in recent years.

The hearing was adjourned to December 14, when the protestants will be given an opportunity to be heard if they desire. The Nebraska commission indicated that it might desire to be heard and a protest was filed by W. J. Frank, an attorney representing 50 shares of minority stock of the Burlington.

THE PRICE OF GOVERNMENT OWNERSHIP.—Disclosures in the United States Shipping Board investigation furnish convincing grounds for argument against government ownership and operation. While the investigation has not yet proceeded far enough to determine whether any blame for unnecessary expenditures rests with those in charge of the Board's affairs, enough has been revealed to show that governmental ownership and operation is a prohibitively costly luxury that can be eliminated with profit to the nation's taxpayers.—*Virginian Pilot and Norfolk Landmark.*



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Bridge Over the Zambezi River, Rhodesia

General News Department

Cleveland, Ohio, to Mineola, N. Y. (New York City), in three hours is the latest speed record of the aeroplane mail service. The estimated average rate of speed was 141 miles an hour.

The Piedmont & Northern recently received at its yard in Charlotte, N. C., 57 cars loaded with automobiles from Michigan, all of which cars were unloaded and returned within 24 hours. One trainload of 40 cars, carrying four automobiles each, arrived on Friday afternoon at 1:30 o'clock; and these, with 17 others, were unloaded on that afternoon and Saturday morning; and the 57 were started back northward at 1:30 p. m. on Saturday. The derrick in the Charlotte freight yard is so situated that freight can be picked up from cars on three tracks without moving the cars, and the automobiles were unloaded at the rate of about one every two minutes, the empty cars being pulled out from one track while the derrick was working on one of the others. The Piedmont & Northern is an electric road, operating 128 miles.

Passing reports, made out daily, to facilitate the tracing of loaded freight cars, are now in use on the New York Central, at the places named below, prepared on the plan in use on the Baltimore & Ohio, and described in the *Railway Age* of June 25 last (page 1973). These reports are sent each day to general and district freight representatives, supplying them promptly with information as to the progress of freight shipments which traverse long distances, for the benefit of inquiring consignees. The places where these reports are made are, on the lines East: New York City (four yards); Ravena, N. Y.; West Albany, N. Y.; Rotterdam Junction, N. Y.; De Witt, N. Y.; Rochester, N. Y.; Belle Isle (Syracuse), N. Y.; West Seneca, N. Y. (westbound); East Buffalo, N. Y. (eastbound); Gardenville, N. Y.; Suspension Bridge, N. Y.; Newberry Junction, Pa.; Canandaigua, N. Y.; Watertown, N. Y., and Ogdensburg, N. Y. On the lines West: Dunkirk, N. Y.; Erie, N. Y.; Collinwood, Ohio; Elyria, Ohio; Sandusky, Ohio; Air Line Junction, Ohio; Elkhart, Ind.; Indiana Harbor, Ind.; Englewood, Ill.; Detroit, Mich.; Coalburg, Ohio, and Kankakee, Ill.

The Use of Powdered Anthracite

A meeting will be held at the Engineers' Club at Philadelphia, 1317 Spruce street, at 8:15 p. m., on December 3, at which the use of powdered anthracite and the recovery and use of river coal will be discussed. Engineers of several anthracite coal mining companies and of railroad and industrial companies using small anthracite will take part in the discussion.

New York Central Safety Bureau

Marcus A. Dow, general safety agent of the New York Central Lines, announces the appointment of safety agents at nine new places, as follows: W. S. Emmet, Weehawken, N. J.; I. G. Jones, West Albany (N. Y.) shops; Jay F. Wallace, Corning, N. Y.; L. W. Newcomb, Watertown, N. Y.; J. S. Pritchard, Collinwood (Ohio) shops; L. F. House, Detroit, Mich.; A. K. Woods, Jackson (Mich.) shops; Guy Taylor, Danville, Ill.; E. E. Wise, Indianapolis, Ind.

A. S. C. E. Holds to Engineering Council

As a subsequent move in the stand that the American Society of Civil Engineers has taken in regard to the Federated American Engineering Societies the former has endeavored through a recent resolution to prevent the dissolution of Engineering Council, or at least to prevent it from turning over its activities to the newly organized American Engineering Council. The resolution as passed by the Board of Direction at its meeting of November 9 and made public at the time of the meeting of the federation in Washington, stated that as the American Society of Civil Engineers by a vote of 3,278 to 2,330 had decided not to become a charter member of the federated societies and that as it has been suggested that the work of Engineering Council should be turned over to and be taken up by the said Federated American Engineering Societies: "Be it resolved that the Board of Direction hereby instruct its representatives upon Engineering Council to state to Engineering Council that they cannot participate in any actions transferring its activities to the Federated American Engineering Societies and that the Board instructs its representatives to express to the Council its hope that Engineering Council will for the present carry forward its work."

Hearing on Maintenance Allowance

The Interstate Commerce Commission has announced a hearing at Washington on December 4 on the question of the amounts to be included in operating expenses of carriers subject to the guaranty provisions of the transportation act for maintenance. The order for the hearing says that questions have arisen in respect of the interpretation of the rule set forth in the proviso in paragraph a of Section 5 of the standard contract between the United States and the carriers and particularly in respect of the allowances and adjustments to be made because of the additions in the costs of labor and materials.

Signal Section—A. R. A.

H. S. Balliet, secretary of the American Railway Association, Signal Section, 75 Church street, New York City, has issued the advance notice of the regular meeting of the section which is to be held at Hotel McAlpin, New York City, on December 2 and 3. The principal items on the program are the reports from eight committees as follows: No. 12, form of contract for installation of interlocking plants and block signalling; No. 2, specification for mechanical interlocking machine, style "A" locking, and specification for concrete trunking; No. 3, specification for circuit controller for drawbridges; No. 4, specification for d. c. automatic block signaling; No. 6, five drawings of new standard designs, one revised drawing and a report on electric lamps; No. 8, information for calculating power supply and distribution, a. c.; No. 10, aspect for "take siding"; No. 13, methods of testing d. c. motor signals, and specification for portable a. c. voltmeters.

The other committees are expected to make progress reports.

This pamphlet contains an illustrated paper, by F. B. Wiegand, describing the Gravit signal, known as the right angle semaphore, which was for many years in extensive use on the Lake Shore & Michigan Southern. This signal was the invention of William G. Gravit, master carpenter on the Lake Shore.

Pennsylvania Makes Headway Against Slide

The landslide on the Pennsylvania in Pittsburgh, Pa., reached its probable peak during the first part of the week of November 21. At that time the slide was moving outward over the tracks of the Pennsylvania at the rate of nearly one foot an hour due to the effect of previous heavy rains. According to General George W. Goethals, who was called in by the city, there is no way to check the slide and it must wear itself out. Throughout the largest part of the time, the railroad has had about eight or nine tracks buried, though ten steam shovels have been working continuously. In addition, the upheaval action of the large stones and parts of the retaining walls which are thought to be working their way under the roadbed has rendered operation difficult over the remaining available tracks. In order to maintain train operation. Due to the drier weather, the slide was moving at last siderable changes in train schedules and terminal points and in some cases local trains were consolidated to relieve the congestion. Dut to the drier weather, the slide was moving at last reports at the rate of about one inch an hour and it is now expected that substantial gains will be made in clearing the tracks.

Traffic News

The annual report of the Panama Canal, just issued, shows for the year an excess of revenues over expenses of operation and maintenance amounting to $2,387,599. The governor of the canal predicted that within a reasonable period of normal world conditions the canal will earn an actual profit on its cost.

Secretaries of the state chapters of the American Mining Congress and officers of operators' associations in several states conferred at Denver, Colo., on November 16, on bullion freight rates. The subject was brought before the Mining Congress in that city in an effort to secure a reduction in charges.

Modification of the car load requirements of the Interstate Commerce Commission affecting grain and grain products when the present regulations go out of force January 1, 1921, was urged by representatives of grain interests at a hearing held at St. Louis, Mo., on November 15. The hearing was held before W. V. Hardie, who is the commission's director of traffic.

The New York Central has established freight and passenger agencies at 14 cities, namely, Birmingham, Ala.; Dallas, Tex.; Denver, Colo.; Kansas City, Mo.; Los Angeles, Cal.; Memphis, Tenn.; Milwaukee, Wis.; Minneapolis, Minn.; Oklahoma City, Okla.; Omaha, Neb.; Seattle, Wash.; San Francisco, Cal.; St. Paul, Minn., and Toronto, Ont.; and has also established freight offices at New Haven, Conn.; New Orleans, La.; and Philadelphia, Pa.

The order of the Interstate Commerce Commission authorizing railroads in New York state to make a general advance in intrastate passenger fares on December 18, will be contested by the attorney-general of the state of New York and by the legal department of the city of New York. The Board of Estimate of the city protests especially against the proposed increase on the Long Island Railroad, and calls upon the legal department of the city to contest the matter in the courts, holding that the Public Service Commission of the state (first district) is the only authority possessing power to regulate passenger fares on the Long Island.

The Traffic Club of Chicago held the first of a series of semi-monthly get-together traffic discussion meetings for the purpose of discussing questions of interest to traffic men, both railroad and industrial, on November 23. The aim of the meetings is educational with the idea of informing traffic men of the reasons for proposed measures, as well as to bring the representatives of the railroads and industries into closer relationship. The subject for the first meeting was "Car Spotting Charges" and C. B. Heinemann, chairman of the special committee of the National Industrial Traffic League, which has this matter in charge, discussed the proposal from the point of view of the shipper.

A Record Average Trainload

The average freight train on the railroads of the United States during the month of August, carried a greater tonnage of freight than for any previous month in railroad history. The Interstate Commerce Commission reports the average in August as 788 tons as compared with 777 in August, 1919. The August average for 1918 was 737 tons; in 1917, it was 684 tons, and in 1916, it was 646 tons. For the eight months of 1920, the average was also greater than for any previous similar period, 729 tons, as compared with 719 in 1919. The figures by months, in 1920, are as follows: January, 672; February, 693; March, 725; April, 666; May, 746; June, 758; July, 769, and August, 788. The heavier train loading was accomplished mainly by utilizing a greater percentage of the capacity of the freight car. The average car load of freight in August was 30.1 tons, against 28.2 tons in August, 1918. The average number of cars per train showed a decrease, from 40.8 to 39.5.

Commission and Court News

Interstate Commerce Commission

The Commission has suspended until March 22 certain increased commodity rates on grain, c.l., from St. Louis, Minneapolis, Chicago and Peoria, to Kansas City.

The Commission has suspended until March 22 proposed increased rates on grain from Mississippi and Missouri river Crossings and other producing points to points in Arkansas, in Missouri Pacific, and St. Louis Southwestern tariffs.

The Commission has suspended until March 22 certain proposed increases in water competitive rates on lumber, c.l., from points in the Carolinas, Georgia, Florida, Virginia and eastern Alabama to Baltimore, Philadelphia, New York and Boston.

The Commission has announced hearing at Topeka, Kan., on December 20, on the question whether the refusal of the Kansas Court of Industrial Relations to authorize for intrastate traffic the full amount of the rate advances allowed for interstate traffic constitutes an undue discrimination against interstate commerce.

The Commission has suspended until March 24 the operation of a tariff which provides for the suspension for the season of 1920, of rail-and-lake and rail-lake-and-rail class and commodity rates applying from eastern points to western points in connection with the Great Lakes Transit Corporation, via Buffalo, Cleveland, and Erie.

The Commission has suspended until March 24 proposed cancellation of rates on coal, c.l., from mines in Kentucky and Tennessee to Atlanta, Ga., via Cartersville, Ga., and the Western & Atlantic. The effect of the proposed cancellation will be to force the payment of an additional switching charge of 30 cents a ton, less $2.50 per car, by the consumers located more than three miles from the point of interchange of the L. & N. with the Southern.

Rates to Canada Must Be Paid in U. S. Money

The Interstate Commerce Commission has issued a decision vacating suspension orders which have rendered inoperative proposed tariff rules requiring the payment of charges in United States currency and prepayment of charges on shipments into Canada in so far as they affect charges for interstate transportation held within the United States and the charges or divisions accruing for that part of the transportation between the United States and a foreign country which takes place within the United States. The rules, which had been suspended and which the commission now finds justified, were intended to protect the carriers from the present depreciation in value of Canadian currency as compared with United States currency and to insure their receiving in lawful money of the United States the full amount of their charges or divisions. The protestants objected to the rules on the ground that they would result in the carriers receiving an over-payment for that part of the transportation which takes place in Canada, but as the commission's jurisdiction is limited to that part of the transportation which takes place within the United States, it does not undertake to pass upon the rules in so far as they affect charges for transportation beyond the boundaries of the United States, but leaves their validity and propriety to be determined under the laws in force where the transportation takes place.

State Commissions

The Public Service Commission of West Virginia has authorized the railroads of that state to make an increase of 20 per cent in their passenger fares on all lines where the present rate does not exceed three cents a mile. The commission also puts on a parity with interstate rates, the tariffs on excess baggage and on milk and cream carried on passenger trains; and also allows a surcharge of 50 per cent on fares for rides in parlor and sleeping cars.

Personnel of Commissions

G. J. Bunting, who recently resigned as comptroller of the Chicago, Milwaukee & St. Paul, has been appointed accounting and statistical assistant to the director of the Bureau of Finance of the Interstate Commerce Commission, at Washington, D. C.

Court News

Rule as to Closing Coach Doors on Entering Tunnels

The Kentucky Court of Appeals holds that where a brakeman, in violation of the company's rules, left the coach door open as the train entered a tunnel and as a result a cinder flew into and injured a passenger's eye, the railroad was liable.—L. & N. v. Roberts (Ky.), 218; S. W. 713.

Persons Crossing Tracks Must Look Out for Backing Trains

In an action for injuries to an automobile at a crossing over a double track, the West Virginia Supreme Court of Appeals holds that the fact that the engine or train doing the injury may have been moving backwards on the track not regularly used by trains going in that direction does not excuse the traveler, as a general rule, from stopping, looking and listening, for he is bound to take notice that the railroad may operate trains on either track in either direction.—Cline v. McAdoo (W. Va.), 102 S. E. 218.

Engineman's Assumption of Risk When Struck While Crossing Bridge

In an action under the Federal Employers' Liability Act for damages for the death of an engineman who, while leaning out of his cab and looking backward, was struck by one of the vertical steel members of a bridge, the special findings showed that the clearance between the bridge and the side of the engine was approximately two feet; that the engineman had been running an engine over the bridge for 15 years; that in the year previous to the accident he had run an engine of the same class over the same bridge 300 times, including 26 times in that month; that he had warned his fireman against the dangers in passing through the same kind of bridges; that the engine he was operating did not sway from side to side in going over the bridge more than was ordinarily the case with engines of similar type. The Kansas Supreme Court held that the railroad was entitled to judgment on these findings, because they established that the engineman had assumed the risk.—McDougall v. Atchison, T. & S. F. (Kan.), 186 Pac., 1028.

Crossing Rules—Traveler Signaled by Watchman to Cross

The Circuit Court of Appeals, Third Circuit, holds that it is the positive duty of an automobile driver approaching railroad tracks where there is a restricted vision to stop, look and listen at a time and place where stopping, looking and listening would be effective, and that, broadly speaking, failure to observe this rule is negligence. The rule is the same in Pennsylvania.

It is also held that when at a grade crossing, gates are raised or a flagman beckons a waiting traveler to come on, there is a representation that there is no approaching train within striking distance. It is in effect an invitation to cross; but one, however, by which the railroad company does not become the guardian of the traveler or an insurer of his safety. It is an invitation only to cross with due care, requiring on the part of the one accepting it the exercise of his sight, hearing and such other factors of safety as the situation and circumstances permit. Where the driver of an automobile, on approaching a strange crossing at night, where at some points near the track the view was obstructed, stopped 20 or 30 feet from the crossing and looked and listened, without seeing or hearing any train, whether he was chargeable with negligence in proceeding to cross on the signal of the watchman without again stopping was held a question for the jury, whose verdict was for the plaintiff.—Philadelphia & Reading v. Le Barr, 265 Fed. 129.

United States Supreme Court

Discrimination in Absorption of Switching Charges

An order of the Interstate Commerce Commission (44 I. C. C., 455), directed the Seaboard Air Line, the Southern, and the Atlantic Coast Line, to abstain, from August 1, 1917, from absorbing switching charges on certain interstate carload freight at Richmond, while refusing to absorb such charges on other similar shipments. The railroads' suit to enjoin the order was dismissed by the Federal district court for the Eastern District of Virginia (249 Fed., 368). The Commission found that if the freight is received at a point served by any two or more of the carriers, the switching charge is absorbed if the freight is delivered on the line of either. But if the delivery is to an industry served only by a non-competitive carrier the switching charge is not absorbed.

The railroads contended that the transportation to the different places was not a like and contemporaneous service of a like kind of traffic under substantially similar circumstances and conditions, but the Supreme Court of the United States holds that the Commission was correct in its finding. Moreover, the findings of fact by the Commission on such questions can be disturbed by judicial decree only in cases where the Commission's action is arbitrary or transcends the legitimate bounds of its authority. The Commission did not hold that switching charges must be always the same. The practice it condemned was that of absorbing switching charges only when the line-haul carrier competes with the switching line, and refusing when the switching line does not compete with the line-haul carrier, which the Commission held was discrimination within section 2 of the Act to Regulate Commerce. The court found no merit in the contention that the Commission's order was too vague and uncertain to be enforced.—Seaboard Air Line v. United States. Decided November 8, 1920. Opinion by Mr. Justice Day.

Assumption of Risk Barring Recovery Under Federal Employers' Liability Act

Action for personal injuries, based on the Federal Employers' Liability Act, was brought against the receivers of the Wabash by an employee who, while engaged in tearing down a bridge, lost his balance and fell 12 ft. to the ground, owing, as was alleged, to a defect in a clawbar which he was directed to use. The bar slipped while he was attempting to draw a bolt. The defect, it was alleged, the plaintiff did not know. Negligence, however, was charged against him, and assumption of risk and contributory negligence. He recovered a verdict of $5,000 in the Missouri state courts. The defect was that the claws of the bar had become so rounded and dull by long usage that they could not be made to grab the shank securely and slipped from their hold when the handle was pressed. The Missouri Supreme Court held that the failure to furnish a reasonably safe clawbar was negligence on the part of the master. If the defects were so glaring and the clawbar so patently defective that a prudent servant could not have used it, then its use under such circumstances was negligence on the part of the servant, which negligence, under the rule in Missouri, would bar him from recovery. But not so under the Federal statute. In other words, the court held that if assumption of risk existed, it amounted in legal effect only to contributory negligence, and that such negligence under the Federal statute worked a reduction of damages and did not a defeat of the action.

The Supreme Court of the United States holds that the state court erred, and the judgment is reversed. Except in the cases specified in section 4 of the Federal statutes, a servant assumes extraordinary risks incident to his employment or risks caused by the master's negligence which are obvious or fully known and appreciated by him (Boldt v. Pennsylvania, 245 U. S. 441; Seaboard Air Line v. Horton, 233 U. S. 492, 503; Jacobs v. Southern, 241 U. S. 229, 235). It was therefore error of the trial court to refuse the instruction requested by the defendants that the effect of the assumption of risk by the plaintiff incident to the use of the clawbar, and the circumstances under which it was used, was to relieve the defendants from liability. Pryor v. Williams. Decided November 8, 1920. Opinion by Mr. Justice McKenna.

Foreign Railway News

Spanish Railways Require Rolling Stock

LONDON.

The Spanish government has authorized the Spanish railway companies to purchase under government guarantees a number of locomotives, passenger cars, and freight cars.

Cost of the Coal Strike to the Railways

LONDON.

The coal strike, Sir Eric Geddes, Minister of Transport, states, has cost the railways a loss of revenue between £2,000,000 and £3,000,000 ($7,000,000 and $10,500,000) per week.

France Offers Electric Locomotives to Chile

LONDON.

The press despatch in the London Times states that a French company has offered the Chilean government oil and electric locomotives to improve the railway service between Arica and La Paz.

German Railways Face Large Deficit

LONDON.

The Times reports that the deficit of the German State railways will shortly exceed 20,000,000,000 marks. This compares with an estimated deficit, last February, of some 2,000,000,000 marks on the Prussian Hessian system, which operates 81 per cent of the railways in Germany.

Australian State to Contract for Electrical Goods

Bids for electrical supplies aggregating $75,000,000 are being invited by the Electricity Commission of the state of Victoria. The equipment will be for the construction of 132,000 volt power station and a 90-mile trasmission line. Plans and specifications for the various portions of the project can be obtained from the New York or Chicago offices of the Bureau of Foreign and Domestic Commerce.

Ministry of Transport's Economies

LONDON.

It was stated in the English Parliament that great economies have been secured by the Ministry of Transport in the working of the railways. This is shown by the fact that while wages have increased on the average by about 250 per cent and materials from 200 per cent to 300 per cent, railway charges have only increased by 75 per cent on ordinary passenger traffic and by an average of 110 per cent on freight.

Preliminary Survey by Airplane

A long flight in an army airplane has enabled an engineer of the Manila Railroad to determine which of three possible routes will be taken by a new line about to be constructed. Permission to use an army airplane was secured from the commanding general of the Philippine department when it was shown that the new railway would have military value. Parts of the territory through which the road will pass are sparsely populated and no comprehensive maps were available. Instead of three parties of engineers being sent out to make the preliminary survey, only one will now be necessary. The innovation has resulted in the saving of many months of time and thousands of dollars.

Increase in Mexico's Shipping Facilities

The Mexican government and Mexican corporations will probably be in the market soon for the purchase of several small, fast steam vessels suitable for the transportation of freight and express along the coast of that country, according to plans now being developed. Some tank ships will also be required. Additional shipping facilities are considered necessary in view of the increasing commerce of the country. The opening of Salina Cruz and Puerto Mexico as free ports will give rise to great increases in the traffic across the Isthmus of Tehuantepec and the organization of a fleet of freight vessels is believed to be necessary in order to avoid a congestion of traffic along this route.

South African Railways Order Equipment

Since May, 1920, the South African Railways have ordered 50 locomotives, 85 passenger cars and 945 freight cars, according to a statement of the company received from Johannesburg. The following percentages of rolling stock are out of commission awaiting repairs: Locomotives, 27 per cent; passenger cars, 11 per cent, and freight cars, 6 per cent. A representative of the company has recently gone to London to organize a publicity campaign, the purpose of which will be to attract tourists to South Africa, to seek markets for surplus products and to attract capital to build up the industries in the territory served by the company. From the beginning of the financial year, April 1 last, and including the week ending August 28, the total earnings of the line were £9,200,610.

Working of the Industrial Councils in Germany

LONDON.

A correspondent writing in the London Observer states that whereas the labor in the collieries of the Ruhr valley, Germany, seem to be peaceful, the railway shopmen are causing trouble. In one shop it was found that a smith had been using Government time and Government steel to manufacture a dozen table knives for his own use. The authorities proposed his dismissal, but the Betriebs-Rat (Industrial Council) forbade it. As a solution of the difficulty it was suggested that the delinquent keep and pay for the results of his labor at the current hourly rates of pay. The Betriebs-Rat saw to it that this was carried out to the letter, and the result was that these Government knives cost their maker 50 marks apiece or 600 marks ($135 pre-war value) the dozen.

Canadian Pacific Cars in Italy

The Italian State Railways have acquired from the Canadian Pacific a train of observation cars which was used on the Austrian State Railways before the war. Upon the outbreak of hostilities the cars were seized by the Austrian government and used by the Red Cross. At the close of the war the cars were returned to the Canadian Pacific, which sold them to the Italian government. The cars were first used in Italy to transport a party of American women who were "seeing Italy" on their way to the International Feminist Convention at Christiana, Norway. Women from America were naturally a bit surprised to find such luxurious traveling facilities in Italy, but thanks to the Canadian Pacific and the fortunes of war, their trip was more comfortable than it otherwise would have been.

Railway Crisis in Ireland

LONDON.

The London Times reports that the Midland Great Western railroad, which links Dublin with the west of Ireland and a large part of the midlands, has taken definite steps to cease work in the near future. Two causes have forced the company into this. One is the refusal of its employees to carry armed troops, policemen or munitions, and the other is a strike of the boilermakers which has been in existence since August. The suspensions of drivers and guards because of their attitude to government traffic have been so numerous that the available men remaining are barely sufficient to work the depleted services.

The position on the Great Southern & Western, which serves the country between Dublin and Cork and on the Dublin & South Eastern, which connects Dublin with the counties of Wicklow and Wexford, while not so critical, is said to be grave. The continued objection of the company's employees to handle government traffic has so depleted the staffs that the closing of both lines appears to be only a matter of time.

The closing of the Midland company's line will have a disastrous effect both on the city of Dublin and on the country. Both the export and import trade through Dublin will receive a serious check and grave fears are entertained of the consequence of a prolonged closing of the line.

Equipment and Supplies

Locomotives

THE CAMOA QUARRY COMPANY, Cuba, has ordered 1 Consolidation type locomotive from the Vulcan Iron Works.

THE MISSOURI PACIFIC, reported in the *Railway Age* of November 12, as being in the market for 25 Mikado type locomotives, has ordered this equipment from the American Locomotive Company.

Freight Cars

THE SEWELL VALLEY is inquiring for 50 hopper cars.

THE BROWN COMPANY, Berlin, N. H., is inquiring for 4 general service cars.

THE SPANISH GOVERNMENT is inquiring, through the car builders, for 200 cars.

THE GRAND TRUNK is inquiring for 175 steel underframes for refrigerator cars.

THE A. M. BYERS COMPANY, Pittsburgh, Pa., is inquiring for 10, 70-ton gondola cars.

THE SOUTH DAKOTA HIGHWAY COMMISSION is inquiring for from 25 to 50 gondola cars.

THE COMMISSIONERS OF THE DISTRICT OF COLUMBIA are inquiring for 3 flat gondola cars of 55 tons capacity.

THE RHODESIAN RAILWAY are inquiring, through the car builders, for 100, 8-wheel high side bogie wagons, of 86,000 lb. capacity.

THE LOUISVILLE & NASHVILLE, reported in the *Railway Age*, November 12, as being in the market for 2,000 steel hopper cars of 55 tons capacity, has ordered 1,500 of these cars from the American Car & Foundry Company and 500 from the Mt. Vernon Car Manufacturing Company.

Iron and Steel

THE PHILADELPHIA & READING has placed orders for 20,000 tons of 100-lb. rails; 5,000 tons will be rolled by the Carnegie Steel Company and 15,000 by the Bethlehem Steel Company. It is expected that 130-lb. sections will be ordered for the remaining 5,000 tons of its 25,000 ton allotment for 1921.

Photograph from Underwood & Underwood, N. Y.

Freight Yards at Stratford, England

Supply Trade News

J. E. Slimp has been appointed manager of sales of the E. T. Chapin Company, Spokane, Wash., with offices at 127 North Dearborn street, Chicago. He will have charge of the territory east of the Dakotas, and in Canada, east if Winnipeg.

C. B. Merrell, who has been for a number of years in the general offices of the **Economy Fuse & Manufacturing Company,** Chicago, has been appointed district sales manager of its Philadelphia office, 523 Widener building, vice E. J. Watson, resigned.

The Chicago Pneumatic Tool Company, New York, announces the removal of its rock drill plant from 864 East Seventy-second street, Cleveland, Ohio, to its Boyer pneumatic hammer plant at 1301 Second boulevard, Detroit, Mich. Location of the company's Little Giant air drill plant at 1241 East Forty-ninth street, Cleveland, remains unchanged.

L. R. Felder has been appointed district manager for the **Keller Pneumatic Tool Company,** in the Milwaukee district, with offices at No. 915 Majestic building, Milwaukee. This company's factory is at Grand Haven, Mich., and its sales office at 20 East Jackson boulevard, Chicago. For the past twelve years Mr. Felder has been associated with the sales organization of the Chicago Pneumatic Tool Company in the Milwaukee territory.

S. C. Wilson has been appointed sales engineer in the Pittsburgh, Pa., office, 1224 Fulton boulevard, of the **Whiting Corporation,** Harvey, Ill., succeeding C. H. Martin. Mr. Wilson for the past year and one-half has served at the main office and works of the company. **J. D. James,** who has been with the Whiting company for the past eleven years, serving in various capacities, has been appointed assistant to **George F. Crivel,** the company's representative at 430 Ellicott Square, Buffalo, N. Y.

The **Morse Chain Company,** Ithaca, N. Y., has established a branch factory in Detroit, which will be devoted exclusively to the manufacture of silent chain sprockets and the Morse adjustment for use in automobile power transmissions. The manufacture of chains and power transmission at the main plant at Ithaca will continue. The Detroit branch will be under the general management of **F. C. Thompson,** with **F. M. Hawley** as chief engineer, and **C. B. Mitchell** as factory manager. The sales and engineering offices are located at the Detroit plant, Eighth and Abbott streets.

The Dunbar Manufacturing Company announces that on November 15 the corporate name of the firm was changed to the **Morton Manufacturing Company. H. U. Morton** is president; **H. H. Schroyer,** vice-president, and **Charles D. Morton,** secretary and treasurer. The factory and general offices are situated at 5133-39 W. Lake street, Chicago, as formerly. Among the railway appliances handled by this company are vestibule diaphragms (canvas and steel), steel doors for passenger and baggage cars, Chanarch steel flooring, car window curtains and fixtures, curtain rollers, sash locks and racks.

The **Walsh Tie Company,** Minneapolis, Minn., has awarded a contract for a creosoting plant, at Minneapolis, to C. F. Haglin & Son, Minneapolis, Minn. The plant is located at the intersecting line of the Minnesota Transfer and Central avenue in North Minneapolis, where the company has purchased 280 acres of land. Construction was begun on October 1 and it is planned to have the plant in complete operation by March 1, 1921. The tie treating plant will consist of two cylinders with a capacity of 1,000,000 ties annually. Two pole treating plants for the butt treatment of telephone and power poles are also being installed and will have a capacity of 10 carloads per day. A storage and concentration yard for cedar poles and posts has also been provided for and the company will build boarding houses to accommodate its employees.

Railway Construction

ARANSAS HARBOR TERMINAL RAILWAY.—This company will rebuild its line from Aransas Pass, Tex., to Port Aransas, a distance of 6½ miles, at a cost of $500,000. It has not yet been determined whether the work will be done by company or contract forces.

ATCHISON, TOPEKA & SANTA FE.—The Interstate Commerce Commission has issued an order authorizing this company and the California, Arizona & Santa Fe to abandon a branch line from Henrietta to Poland, Ariz., a distance of approximately 5.9 miles.

ATCHISON, TOPEKA & SANTA FE.—This company, which was noted in the *Railway Age* of November 5 (page 817), as accepting bids for a 100 ft. frame extension to its freight house at Topeka, Kan., to cost approximately $50,000, has let the contract for this work to Swanson Bros., Topeka. This company will also build coaling stations at Frey, Lehigh and Skedee, Okla. Cinder conveyors as well as coaling stations will be built at South Shawnee, Guthrie and Cushing, Okla.

CAROLINA LINES.—This company contemplates the construction of a new line from Charlotte, N. C., to Winston-Salem, a distance of 75 miles. There will be one important bridge, 600 ft. in length. The offices of the company are located temporarily with the Simmons Construction Co., Charlotte, N. C.

CHESAPEAKE & OHIO.—This company will add 10 stalls to its engine house, install a new turntable, and erect an ice plant, storeroom and office building at Clifton Forge, Va., at an approximate cost of $600,000.

COWLITZ, CHEHALIS & CASCADE.—The ownership of this line has changed and the general offices have been moved from Seattle to Chehalis, Wash. The following new officers have been elected: C. L. Brown, president; W. E. Brown, vice-president and general manager, and A. Fuss, secretary. The new management has announced that many improvements will be undertaken and that the line will be extended.

GULF, COLORADO & SANTA FE.—This company contemplates the elimination of grade crossings at Merlin and Chestnut streets, Dallas, Tex.

HOUSTON & SHREVEPORT.—This company contemplates the replacement of steel bridges over the San Jacinto, Trinity Neches, and Sabine rivers, at a cost of approximately $265,000. The company is also strengthening the timber trestles on its entire line at a cost of about $20,000, to permit the use of heavier motive power.

LEHIGH VALLEY.—This company is changing the course of a creek near Waverly, N. Y., which will permit the elimination of two existing bridges. It is estimated that the work will cost approximately $100,000.

LONG ISLAND.—This company is contemplating changes in the arrangement of its stations at Railroad avenue, Warwick street, Nostrand avenue and Flatbush avenue, Brooklyn, N. Y., at a cost of approximately $30,000. An overhead bridge and changes in the station at East New York are also contemplated, to cost approximately $45,000.

NEW YORK CENTRAL.—This company, which was noted in the *Railway Age* of October 29 (page 773) as receiving bids for the construction of a subway under its tracks at Rochester, N. Y., has awarded the contract for this work to the Walsh Construction Company, Davenport, Ia.

NORFOLK & WESTERN.—This company is adding 16 stalls to its 24-stall engine house at West Roanoke, Va. The company is also adding 8 stalls to its engine house at Bristol, Va.

SPAULDING LOGGING COMPANY.—This company, whose headquarters are at Sheridan, Ore., contemplates the construction of two logging lines from the terminus of the Willamina & Grand Ronde at Bentley, Ore., into the Spaulding Company's timber holdings on either side of Bentley. Grading of the new lines will be handled by a force now engaged in completing the line of the Willamina & Grand Ronde from Willamina, Ore., to Bentley.

THE MIAMI CORPORATION, CHICAGO.—This company has awarded a contract to the Northern Construction Co., Vancouver, B. C., for the construction of five miles of logging railway from Fraser River, B. C., to Timber Limit. The Northern Construction Co. will handle all work of clearing, grading and construction of bridges and trestles. The work will cost approximately $400,000.

THE SAN FRANCISCO-OAKLAND TERMINAL RAILWAYS.—This company has applied to the Railroad Commission of California for authority to abandon service and to dismantle its San Lorenzo branch line. The company says that the line has been operated at a loss for the last three years.

THE SUGAR PINE RAILWAY.—This company, operating between Ralph, Cal., and Lyons Dam, a distance of approximately 15 miles, has applied to the Railroad Commission of California for permission to abandon its service. The company's application states that the road has never made any money, that its principal business has consisted of hauling logs for the Standard Lumber Company, Sonora, Cal., and that it owes approximately $67,000 to the Standard Company, which has met several of the railway's operating deficits. The application further states that if the company is to continue in business, it must rebuild practically its entire line.

TEXAS & PACIFIC.—This company will accept bids about November 30 for the construction of a one-story brick passenger station at Ranger, Tex., which will cost about $90,000 complete. The company has recently awarded a contract to the Missouri Valley Bridge & Iron Company, for the construction of a substructure necessary for installing a 135-ft. double-track bascule bridge span over the Bayou Plaquemine, at Plaquemine, La. The new bridge will replace a single-track swing span which is too old and light for further service. The contract has not yet been let for the superstructure, which is estimated to cost $235,000 complete.

UNION PACIFIC.—This company has been granted a certificate of convenience and necessity by the Interstate Commerce Commission authorizing an extension of the line of the North Platte branch approximately 30.3 miles through Scotts Bluff County, Nebr., to a point in Goshen County, Nebr., and a 13.2 mile branch in Goshen County, making a total extension of 43½ miles, at an estimated cost of approximately $3,835,000.

WICHITA FALLS & SOUTHERN.—This company has applied to the Interstate Commerce Commission for certificate authorizing it to construct and operate a new line from Newcastle, Tex., to Breckinridge, a distance of 44 miles.

THE INTERSTATE COMMERCE COMMISSION has issued Accident Bulletin No. 75, containing the statistics of accidents on the railroads of the United States in the three months ending with March, 1920. In train accidents, 21 passengers, 113 employees and ten other persons were killed, and 944 passengers, 980 employees and 37 other persons were injured. In the same quarter of 1919, 51 passengers, 89 employees and seven other persons were killed, and 949 passengers, 658 employees and 18 other persons were injured. Adding all other accidents, the totals for the quarter now reported were 1,457 persons killed and 39,507 injured, as compared with 1,735 killed and 35,111 injured in the same quarter of 1919.

The damage to cars, engines and roadways by collisions, derailments and other train accidents in the first three months of 1920, amounted to $7,319,580, as compared with a total in the same quarter of 1919 of $4,359,550. This large increase is explained mostly or wholly by the increases in the price of labor and material necessary to repair the damage done. Of the 8,346 train accidents occurring in the quarter under review, 7,555 involved no injury to persons; and this number is larger than in former years because of the minimum cost limit. An accident damaging railway property to the amount of less than $150 is not reported; but, because of the increase in costs, this limit now makes necessary the inclusion of cases formerly omitted from the reports.

The Bulletin contains seven pages of the usual detail tables.

Accident Bulletin No. 74, containing totals for the year 1919, was noticed in the *Railway Age* of November 19, page 894.

Railway Financial News

CHESAPEAKE & OHIO.—Kuhn, Loeb & Co. and the National City Company have bought and resold at private sale an issue of $4,500,000 6½ per cent equipment trust certificates, series S. The certificates will mature $375,000 each year. They are to be issued by the Commercial Trust Company of Philadelphia, as trustee, from December 1, 1924, to December 1, 1935.

CHICAGO, ROCK ISLAND & PACIFIC.—This company has applied to the Interstate Commerce Commission for authority to issue its rent notes for $4,421,000 and to participate in the National Railway Equipment Corporation equipment trust for the purchase of equipment of that amount.

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.—This company has applied to the Interstate Commerce Commission for authority to assume an obligation and liability as lessee of the Cincinnati Southern to pay as increased rental the interest as it becomes due on an issue of not exceeding $3,500,000 of municipal gold bonds of the City of Cincinnati at 5 per cent and a further sum of 1 per cent to provide a sinking fund for the retirement of the bonds on July 1, 1965. The contract has been let for a new bridge over the Ohio river at Cincinnati which it is estimated may cost $3,500,000 and the company has entered into an agreement with the trustees of the Cincinnati Southern providing for the issue of the city bonds to pay for the bridge, on condition that the lease of the Cincinnati Southern be amended to provide for the increased rental.

CINCINNATI NORTHERN.—This company has applied to the Interstate Commerce Commission for authority to issue a 6 per cent 10-year promissory note of $113,000 to the Cleveland, Cincinnati, Chicago & St. Louis for a loan for additions and betterments.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—This company has applied to the Interstate Commerce Commission for authority to issue $3,944,000 of 6 per cent promissory notes for approximately $262,933 each, maturing serially, payable to the New York Central; also a 6 per cent 10-year promissory note for $4,560,000 to the New York Central; $4,560,000 of its 6 per cent refunding and improvement mortgage bonds dated July 1, 1920, and maturing July 1, 1935, to be pledged as security for the note of similar amount; also $4,189,000 of its 6 per cent refunding and improvement mortgage bonds dated July 1, 1919, and maturing July 1, 1929; also $113,000 of 10-year 6 per cent promissory notes payable to the New York Central. The notes are to pay 25 per cent of the cost of equipment included in the New York Central equipment trust and to pay for additions and betterments to existing equipment amounting to $529,000. The company also asks authority to guarantee a 6 per cent 10-year promissory note of the Cincinnati Northern for $113,000, payable to the applicant.

DENVER & RIO GRANDE.—This railroad was sold at foreclosure on November 20 to the Western Pacific Railroad for $5,000,000. Court confirmation of the sale has been deferred until December 18 to give the Denver & Rio Grande Stockholders' Protective Committee time to have its appeal heard.

KANAWHA & MICHIGAN.—This company has applied to the Interstate Commerce Commission for authority to issue a 6 per cent, 10-year promissory note for $256,000, payable to the New York Central, for a loan the proceeds of which are to be used for additions and betterments and for the rebuilding of equipment.

LAKE ERIE & WESTERN.—This company has applied to the Interstate Commerce Commission for authority to issue a 6 per cent 10-year promissory note for $609,000, payable to the New York Central.

LONG ISLAND.—This company has applied to the Interstate Commerce Commission for authority to issue refunding mortgage bonds not exceeding $3,876,000 in exchange for its outstanding unified mortgage bonds.

MASON CITY & FT. DODGE.—Following an announcement by the Chicago Great Western, its controlling road, that interest on $12,000,000 50-year 4 per cent first mortgage bonds of the Mason City & Ft. Dodge will not be paid on December 1, a bondholders' protective committee has been formed composed of the following: M. N. Buckner, president of the New York Trust Company; H. S. Marston, of Blair & Co.; F. H. Ecker, vice-president of the Metropolitan Life Insurance Company, and Eugene M. Stevens, vice-president of the Illinois Trust and Savings Bank.

MINNEAPOLIS & ST. LOUIS.—This company has applied to the Interstate Commerce Commission for authority to issue $5,925,000 of rent notes and to participate in the National Railway Equipment Corporation equipment trust for the purchase of equipment of that amount.

MINNEAPOLIS & ST. LOUIS.—This company has applied to the Interstate Commerce Commission for authority to issue its promissory notes and assume obligations with reference to the purchase of 100 refrigerator cars from the Union Refrigerator Transit Company at a cost of $2,275 each. The company proposes to issue 36 notes for $5,055.55 each as a part of the purchase price.

MICHIGAN CENTRAL.—This company has applied to the Interstate Commerce Commission for authority to issue 6 per cent promissory notes of $262,000 each, aggregating $3,930,000, maturing serially yearly from 1921 to 1935, payable to the New York Central; also a 6 per cent 10-year promissory note for $613,000, payable to the New York Central; also $507,000 of its 6 per cent refunding and improvement mortgage bonds dated July 1, 1920, and maturing July 1, 1935, to be pledged as security for the note of $613,000. The notes are in return for a loan to provide 25 per cent of the cost of equipment included in the New York Central equipment trust of 1920, and to pay the cost of additions and betterments to existing equipment amounting to $1,885,000.

NEW YORK CENTRAL.—This company has applied to the Interstate Commerce Commission for authority to issue $6,494,000 of its 6 per cent refunding and improvement mortgage bonds and $9,600,000 of its 6 per cent equipment trust gold certificates of 1920 and to guarantee $3,930,000 of Michigan Central 6 per cent promissory notes, payable to the New York Central, and also promissory notes from its other subsidiaries, all to be pledged by the applicant as collateral security for its promissory notes proposed to be given to the Secretary of the Treasury, amounting to $14,850,000. These are to be notes maturing serially for 15 years at 6 per cent for a loan to be used to provide 25 per cent of the cost of equipment and to pay for additions and betterments. The notes of the subsidiary companies are to be acquired by the applicant in return for loans of like amounts proposed to be made.

NEW YORK, NEW HAVEN & HARTFORD.—This company has been authorized by the Interstate Commerce Commission to issue, not exceeding $80,000,000 of first and refunding mortgage gold bonds, series A, and to pledge all or part as security for note or notes to be issued payable to the director-general of railroads in connection with the funding of its indebtedness to the United States incurred during the period of federal control; also to issue not exceeding $15,000,000 of first and refunding mortgage gold bonds, series B, and to pledge all or part as security for a loan from the United States from the revolving fund.

NORFOLK SOUTHERN.—This company has applied to the Interstate Commerce Commission for authority to issue $222,000 of 10-year first lien equipment trust notes at 6 per cent, dated October, 1920, and payable in October, 1931; also $200,000 of its first and refunding mortgage bonds, dated February 1, 1911; also $111,000 and $200,000 of notes to the Secretary of the Treasury for a loan from the revolving fund to be secured by the deposit of the equipment notes and the bonds.

TOLEDO & OHIO CENTRAL.—This company has applied to the Interstate Commerce Commission for authority to issue a 10-year 6 per cent promissory note for $214,000, payable to the New York Central.

WESTERN PACIFIC.—See Denver & Rio Grande.

ZANESVILLE & WESTERN.—This company has applied to the Interstate Commerce Commission for authority to issue a 6 per cent, 10-year promissory note for $60,000 payable to the New York Central for a loan for additions and betterments.

Railway Officers

Executive

F. S. Wynn, whose election as vice-president of the Southern was announced in the *Railway Age* of November 19 (page 905), was born September 9, 1879, at Danville, Va. He was graduated from the Georgetown University law school in 1906, after having entered railway service in the law department of the Southern at Washington, D. C., in 1900. He later served as secretary and also as chief clerk to the assistant to president and vice-president. In 1909 he was appointed assistant secretary and in August, 1910, purchasing agent, which position he held until January, 1914, when he was appointed secretary, with headquarters at New York. In July, 1918, he was made treasurer in addition to his duties as secretary. He continued in this position until his recent promotion.

F. S. Wynn

L. C. Gilman, whose election as vice-president of the Great Northern, with headquarters at Seattle, Wash., was announced in the *Railway Age* of October 22 (page 728), was born at Levant, Me., on January 28, 1857. Mr. Gilman was educated at the Maine Central Institute, at Pittsfield, Me., from which he graduated in June, 1879, and at the Law School of Columbia University in New York, where he received a degree in May, 1883. He entered railway service in October, 1903, as western counsel of the Great Northern, with headquarters at Seattle, Wash. On February 1, 1909, he was made assistant to the president of the Great Northern, with headquarters at St. Paul, Minn., where he served until June 1, 1914, when he was elected president of the Spokane, Portland & Seattle, and subsidiary lines, including the Oregon Trunk Railway, the Oregon Electric Railway Company, the Pacific & Eastern Railway, and the United Railway. On June 20, 1918, Mr. Gilman was appointed director of the Puget Sound district, comprising the states of Oregon and Washington, by the United States Railroad Administration. He served in this position throughout the period of federal control, and when the roads were returned to their owners he was re-elected president of the Spokane, Portland & Seattle and its subsidiaries. On November 15, 1920, Mr. Gilman resigned as president of the Spokane, Portland & Seattle and its subsidiaries to enter upon his new duties as vice-president of the Great Northern.

L. C. Gilman

Financial, Legal and Accounting

Charles C. Rose has been elected treasurer of the Spokane, Portland & Seattle, with headquarters at Portland, Ore., effective November 15, succeeding M. Barger, deceased.

C. E. A. McCarthy, whose appointment as secretary of the Southern was announced in the *Railway Age* of November 19 (page 905), was born in Brooklyn, N. Y., November 27, 1873. He was educated at St. James Commercial Academy, Brooklyn and entered railway service for the first time in December, 1888, as a clerk in the office of the general superintendent of the Central of New Jersey. In 1890 he left this company to take a position as a clerk in the offices of the Pullman Company. He became a chief clerk in the operating department of the Pullman Company in 1897, which position he resigned in 1898 to become a stenographer in the office of the secretary of the Southern at New York. In 1901 he was appointed assistant secretary, which position he held at the time of his recent promotion.

Daniel Taylor, whose promotion to general attorney of the Chicago, Rock Island & Pacific, with headquarters at Chicago, was announced in the *Railway Age* of October 15 (page 678), was born at Verona, Miss., on August 6, 1880. He entered the University of Arkansas in 1896, graduating in 1900. He received a degree from the law school of Cumberland University in 1906, and immediately engaged in general legal practice at Pine Bluff, Ark. While at Pine Bluff Mr. Taylor served as legal representative of several railroads, including the Missouri Pacific. During the war he was commissioned major in the judge advocate's department and served in France, being attached to the office of the judge advocate general of the American Expeditionary Forces at general headquarters in Chaumont. He returned to the United States in October, 1919, and on January 1, 1920, was appointed assistant general attorney of the Rock Island, the position which he held at the time of his recent promotion. As general attorney of the Rock Island, Mr. Taylor will have immediate charge over all litigation in Illinois.

Daniel Taylor

Robert Crosbie, secretary of the Spokane, Portland & Seattle, with headquarters at Portland, Ore., has been elected comptroller, with the same headquarters, succeeding W. F. Turner, who has been elected president, effective November 15.

Operating

P. D. Barry has been appointed assistant superintendent of the Montana division of the Northern Pacific, with headquarters at Billings, Mont., effective November 9.

W. S. Butler, master mechanic of the Chesapeake & Ohio, with headquarters at Huntington, W. Va., has been appointed assistant to the general superintendent, with the same headquarters.

Geo. T. Reid has been elected vice-president of the Spokane, Portland & Seattle, with headquarters at Tacoma, Wash., succeeding W. F. Turner, who has been elected president, effective November 15.

E. I. Ford, general superintendent of the Chesapeake & Ohio terminal at Newport News, Va., has resigned, to become vice-president and traffic manager of the Consolidated

Pocahontas Coal Company, with headquarters at Baltimore, Md. **M. C. Selden,** superintendent of terminals at Newport News, has taken over the duties of Mr. Ford's office.

W. H. Bevans, assistant superintendent of the St. Louis-San Francisco, with headquarters at Enid, Okla., has been promoted to superintendent of the Western division, with the same headquarters, succeeding **J. E. Liston.** Mr. Liston has been transferred to the Southern division, with headquarters at Memphis, Tenn., succeeding P. O. Wood, who has been assigned to other duties. These appointments are effective November 18.

Ira B. Richards, whose appointment as superintendent of transportation of the Northern Pacific was announced in the *Railway Age* of November 5 (page 819), was born May 20, 1864, at Bowling Green, Mo., and was educated in the public schools. He entered railway service with the Chicago & Alton as a telegraph operator in 1880. In 1882 he went to New Mexico as a telegraph operator for the Atchison, Topeka & Santa Fe, and, in 1882, returned in the same capacity to the Chicago & Alton at Chicago. In 1885 he became a train despatcher on the St. Louis Southwestern, and in 1890 went to Tacoma, Wash., as a despatcher for the Northern Pacific. In 1892 he was promoted to chief despatcher, and, in 1897, to train master. In 1903 he was appointed superintendent of transportation, with headquarters at St. Paul, Minn., and, in 1910, general superintendent, with headquarters at Tacoma, which position he was holding at the time of his recent appointment.

Traffic

James N. Gall has been appointed general agent of the Boston & Maine, with headquarters at Chicago, effective November 15.

Frank F. Rice, whose appointment as traffic manager of the Cairo, Truman & Southern, with headquarters at St. Louis, Mo., was announced in the *Railway Age* of October 29 (page 775), was born at Louisiana, Mo., on November 25, 1887, and entered railway service in January, 1902, as a messenger and clerk in the offices of the Chicago, Burlington & Quincy at East St. Louis, Ill. In July, 1905, he left the service of the Burlington to become a clerk in the East St. Louis offices of the Illinois Central, where he was employed until October, 1906, when he became a clerk on the Vandalia Railroad, remaining at East St. Louis. After a year of service with the Vandalia, Mr. Rice became a clerk in the offices of the Mobile & Ohio, at East St. Louis, a position which he held until July, 1910, when he became a clerk in the office of the Toledo, St. Louis & Western. From February, 1913, when he was made rate clerk, to September, 1920, he served continuously with the Toledo, St. Louis & Western. At the time of his recent appointment Mr. Rice was serving as contracting freight agent, with headquarters at St. Louis, Mo., a position to which he had been promoted in February, 1913.

F. F. Rice

A. K. Morris, coal traffic manager of the Erie, with headquarters at New York, has resigned to enter the service of another company. **F. D. Austin,** coal freight agent, with headquarters at New York, has been appointed general coal freight agent, with the same headquarters. **G. H. Reinbrecht** succeeds Mr. Austin as coal freight agent at New York.

Mechanical

A. E. Smith, master car builder of the Union Tank Car Company, has been elected vice-president in charge of construction and maintenance of plant and equipment, with headquarters at New York, effective November 15. The office of master car builder has been abolished.

H. C. Gillispie, master mechanic of the Chesapeake & Ohio, with headquarters at Peru, Ind., has been transferred to a similar position at Huntington, W. Va., succeeding W. S. Butler, promoted. **E. R. Woody,** assistant mechanic at Fulton, Va., succeeds Mr. Gillispie as master mechanic at Peru.

H. L. Worman, assistant superintendent of motive power of the St. Louis-San Francisco, has been appointed superintendent of motive power, with headquarters at Springfield, Mo., succeeding C. C. Higgins, deceased. Mr. Worman was born at Salem, Ohio, July 19, 1877. He entered the service of the St. Louis-San Francisco in 1905 as a machinist in the shops at Kansas City, Mo. In 1906 Mr. Worman was appointed roundhouse foreman at Kansas City. In 1907 he became erecting foreman and in 1908 machine foreman in the same shop. In 1911 he was appointed general foreman at Fort Scott, Kan., and in 1916 he became traveling roundhouse foreman for the entire system. In 1917 he was appointed master mechanic at Memphis, Tenn. In 1919 he was appointed assistant superintendent of motive power, with headquarters at Springfield, Mo., which position he held at the time of his recent promotion.

H. L. Worman

Engineering, Maintenance of Way and Signaling

H. L. Kile, roadmaster on the Western Pacific, with headquarters at Oakland, Cal., has been promoted to engineer of the Western division, with headquarters at Sacramento, Cal.

G. N. Prentiss, chemist on the Chicago, Milwaukee & St. Paul, with headquarters at Milwaukee, Wis., has been appointed engineer of tests, with the same headquarters, effective November 16.

The transfer of **W. A. Kennon,** division engineer of the Missouri Pacific, with headquarters at St. Louis, Mo., to a similar position at Osawatomie, Kan., which was announced in the *Railway Age* of November 19, has been cancelled and Mr. Kennon will remain in the same position at St. Louis. **E. P. Hawkins,** division engineer, at Wichita, Kan., has been transferred as division engineer, with headquarters at Osawatomie, Kan. **J. R. Nagel,** division engineer at Nevada, Mo., who was to have succeeded Mr. Kennon at St. Louis, has succeeded Mr. Hawkins at Wichita.

Purchasing and Stores

B. B. Brain, whose appointment as purchasing agent of the Kansas City Southern was noted in the *Railway Age* of November 19 (page 906), entered railway service in 1885 with the Kansas City, Fort Scott & Memphis (now a part of the St. Louis-San Francisco). In 1902 he went to the Kansas City Southern as general storekeeper, with headquarters at Kansas City. Later he served as chief clerk in the purchasing department and, since 1912, has been fuel agent for the company, which position he held at the time of his recent appointment.